UNIVERSITY OF SOUTHAMPTON

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School of Management

**The influence of corporate disclosure on investor confidence
in Thai listed companies**

by

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ABSTRACT

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The thesis is a study of corporate disclosure and stock market liquidity in Thailand. It uses a two-phase exploratory design in which the results from the qualitative method phase of the study are used to inform the quantitative method phase. The qualitative phase of the study aims to gain an understanding of corporate disclosure and the sources of information used of by financial analysts and the fund managers in Thailand. Specifically, it explores the use financial analysts and fund managers make of different sources and channels of communication, and their views on the purpose and the quality of disclosure and of the reasons why companies may choose to disclose information voluntarily. It also explores financial analysts' and fund managers' perceptions about the value of the audit report. The qualitative study is based upon interviews with financial analysts and fund managers working in Thailand and uses grounded theory to analyse the interview material. The quantitative phase of the study examines the relationship between the voluntary information disclosure by Thai listed companies and stock market liquidity. In particular, it examines the relationship between stock market liquidity and: (i) categories of information disclosure; and (ii) channels of information disclosure. It also examines the relationship between information disclosure and: (i) audit firm size, and (ii) analyst following. Disclosure is measured in two ways: first using ratings by financial analysts and fund managers of companies' public and private disclosures and second by means of a disclosure index. Stock market liquidity is measured using information obtained from the Stock Exchange of Thailand '*SET Market Analysis and Reporting Tool*' database. The empirical results show strong evidence to indicate that disclosing more voluntary information, particularly through public disclosure, reduces information asymmetry, improves investor confidence and enhances the stock market liquidity. In addition to the results of the primarily investigation, this study also finds that there is a significant and positive relationship between the audit firm size and the level of voluntary information disclosure. Moreover, the results report that not all sections of information disclosure are related to the size of analyst following.

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Chapter 1

Introduction

1.1 Background of the research

The unexpected collapse of a number of major companies from the Asian Financial Crisis has emphasised the importance of high quality information disclosure for investors and the public generally. Most of the extant finance and accounting literature suggests that the levels of information disclosure, generally used as a proxy for the quality of information disclosed, by listed companies has an impact on the functioning of capital market, in particular on the liquidity and pricing of individual stocks. By disclosing more information, companies are seen to reduce information asymmetries and by so doing, increase an investor confidence.

There are various ways that companies may disclose information to investors and other participants in the capital market. A distinction is often drawn between public and private disclosures. Public disclosures are frequently made through the companies' annual reports and other filings with regulatory bodies. The form and content of these disclosures are usually governed by regulation. Companies may also

make additional voluntary disclosures. As well as disclosing information publicly, companies often communicate more directly with certain privileged groups such as securities analysts and large investors such as fund managers. This may take a variety of forms, in part dependent upon the company itself and the regulatory environment in which it is located. These private disclosures may be made, for example, in the context of face-to-face meeting, or telephone conversations, with companies' senior management, organised company visits, or through investor relation (IR) departments. The level of information disclosure, the nature of the corporate disclosures, and the channels through which the disclosures are made, may differ between countries. This may be partly related to differences in legal and other regulatory rules governing the supply of information by companies. It may also reflect different customs and practices that have developed over time and these, in turn, may reflect wider cultural factors.

The present study has two main purposes. The first is to gain an understanding about corporate disclosure and the use of information by financial intermediaries in Thailand, and the second is to examine the effect of the level of voluntary information disclosure on the liquidity of shares traded on the Stock Exchange of Thailand. The first part of the study takes a qualitative approach to explore the use securities analysts and fund managers in Thailand make of disclosures by companies. It explores their preferences as to the sources and channels of information disclosure, their views on the purpose and quality of disclosure and of companies' reasons in choosing to disclosure information voluntarily. The study examines security analysts' and fund managers' views about the usefulness of information types contained within the reports as a whole as well as in individual sections, and the extent to which the auditors' report enhances the value of the annual report. This part of the study both provides a better understanding of the phenomenon itself and forms the basis for the second part of the study which is an empirical investigation the effect of the level of voluntary information disclosure on stock market liquidity.

The motivation for the second part has its roots in the Asian Financial Crisis. There have been many questions about the roles of accounting reporting and information disclosure when the financial crisis had hit the East Asian economies during 1997. Some have complained about insufficient transparency and the lack of information

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(Alba, Claessens & Djankov, 1998; Alba, Hernandez & Klingebiel, 1999). It seems likely that the major cause of this collapse occurred because of a lack of transparency and accountability, especially, in the inadequate of information disclosed by companies. As a consequence of the crisis, investors have felt uncertainty about the value of companies, and this has lead to a reduction in the number of the investors who are interested in investing in Asian, particularly in Thailand.

After this crisis, not only did the Stock Exchange of Thailand (SET) try to improve investor confidence by requiring Thai listed companies to increase the transparency of their reports and information disclosures, but most listed companies tried to improve transparency by providing additional information (voluntary information). It is often argued in the literature that companies might benefit from providing voluntary information to investors and financial analysts through the annual report. By disclosing more additional information, investors will perceive that the company is being transparent. This perceived transparency will increase the investors' confidence in the value of the company which, in turn, increase the company's stock market liquidity.

The foregoing argument is closely linked with concepts of information asymmetry and agency theory. Low levels of public information disclosure can lead to information asymmetry among the investors and between companies and outside investors, and to adverse selection problem. In practice, this adverse selection problem tends to reduce companies' stock market liquidity. To overcome the information asymmetry and agency problem, companies can disclose more information. This will reduce the information gap between the companies and outside investors, and between groups of investors, which in turn, will enhance interest in the companies' stock and will increase the stock market liquidity (Diamond & Verrecchia, 1991). This argument is also supported by the study of Leuz and Verrechia (2000) which found that higher market liquidity can be used as an indicator that the companies' stocks have become more popular investments due to the higher levels of information disclosed by companies.

There are only few studies that document the relationship between the level of information disclosure and the market liquidity (Welker, 1995; Healy, Hutton &

Palepu, 1999; Leuz & Verrecchia, 2000; Heflin, Shaw & Wild, 2001; Peterson & Plenborg, 2006). The majority of these studies are based on US data. In addition, Healy and Palepu (2001) point out some interesting issues that are not yet been explored in the disclosure literature. In particular, can the results from studies using US data be generalised to non-US countries which are characterised by a different institutional setting? Several institutional differences, such as the ownership structure and the level of investor protection, may cause a different relationship between the level of voluntary information disclosure and stock market liquidity.

The remainder of this chapter will highlight the justification of the research, the research objectives and questions. This chapter also describes the research methodology and the definitions of terms used in the study, as well as summarising the structure of this thesis.

1.2 Justification of the research

The reason of choosing Thailand as the context for this research is motivated by several factors. First, Thailand is a developing country where the literature on corporate disclosure, particularly the relationship between the level of information disclosure and the stock market liquidity, is sparse.

Second, most of the studies up to date focus on developed markets, while Thailand is considered as an emerging market. As mentioned above, the extant literature shows that only a few studies have directly examined the relationship between the level of voluntary information disclosure and stock market liquidity, and those studies have been conducted in developed countries, particularly US, where stock markets are viewed as developed.

This leads to the question that whether the level of voluntary information disclosure in countries characterised by different institutional features (i.e. financial markets, legal protection, and ownership structure), such as Thailand, has the same effect in mitigating information asymmetry and enhancing stock market liquidity as in the developed countries like the US.

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Evidence from Thai listed companies may shed new light on the association between the levels of voluntary information disclosure and stock market liquidity. Finally, the findings from this study may enable regulators and accounting policy makers to form a better understanding of disclosure issues and so could be of benefit to Thailand and other East Asian developing countries.

1.3 The research objectives and questions

As this thesis has two main purposes, the research objectives and the research questions will divided into two parts. The first part of this section presents the research objective for the qualitative study, and the latter part presents the research objective and research questions for the quantitative investigation.

The qualitative study

The qualitative study aims to provide a better understanding of corporate disclosure and the use of information based on the views of the financial analysts and the fund managers in Thailand. Therefore, the main research objective for this part is:

> "to gain an understanding of the corporate disclosure and the use of information by financial analysts and the fund managers in Thailand."

The specific research objectives for the qualitative part of this research are to gain an understanding of:

- The use financial intermediaries make of different sources and channels of communication.

- Financial intermediaries' views on the purpose and quality of disclosure.

- Financial intermediaries' views on the reasons why companies may choose to disclose information voluntarily.

- Financial intermediaries' views on the usefulness of different types of information contained within the annual report.

- Financial intermediaries' views on the extent to which the auditors' report enhances the value of the annual report.

The quantitative study

The quantitative study explores the relationship between the level of disclosure, information asymmetry, and the stock market liquidity based on a sample of Thai listed companies. The main research question for this part begins with the question: '*How does the level of voluntary information disclosure effect the liquidity of shares traded on the Stock Exchange of Thailand.*' Thus, the main research objective, which is also the benchmark test of this study, is:

"to examine the relationship between the stock market liquidity and the level of voluntary information disclosure."

Apart from the benchmark test, this part of the study incorporates additional variables into the conceptual framework. The research objectives for the additional analysis of this study are summarised below:

- To examine the relationship between the stock market liquidity and categories of information disclosure: information in the strategy section, financial section, and non-financial sections of the annual report: information provided by investor relations and other channels of information disclosure.

- To examine the relationship between the stock market liquidity and the channels of information disclosure.

- To examine the relationship between the size of the company's auditor and information disclosure.

- To examine the relationship between the stock market liquidity and the size of the company's auditor.

- To examine the relationship between a company's analysts following and information disclosure.

1.4 The research methodology

The study uses a two-phase exploratory mixed methods research design. This begins with the qualitative study and is followed by the quantitative study. The results of the qualitative method phase can help develop or inform the quantitative method phase (Greene, Caracelli & Graham, 1989). This research design is based on the premise that the qualitative study enables the researcher to explore and obtaining a better understanding of the phenomenon. It is particularly useful in developing a research instrument when one is not available and for identifying variables for inclusion in the quantitative study. The overall research design of this research is shown in Figure 1-1.
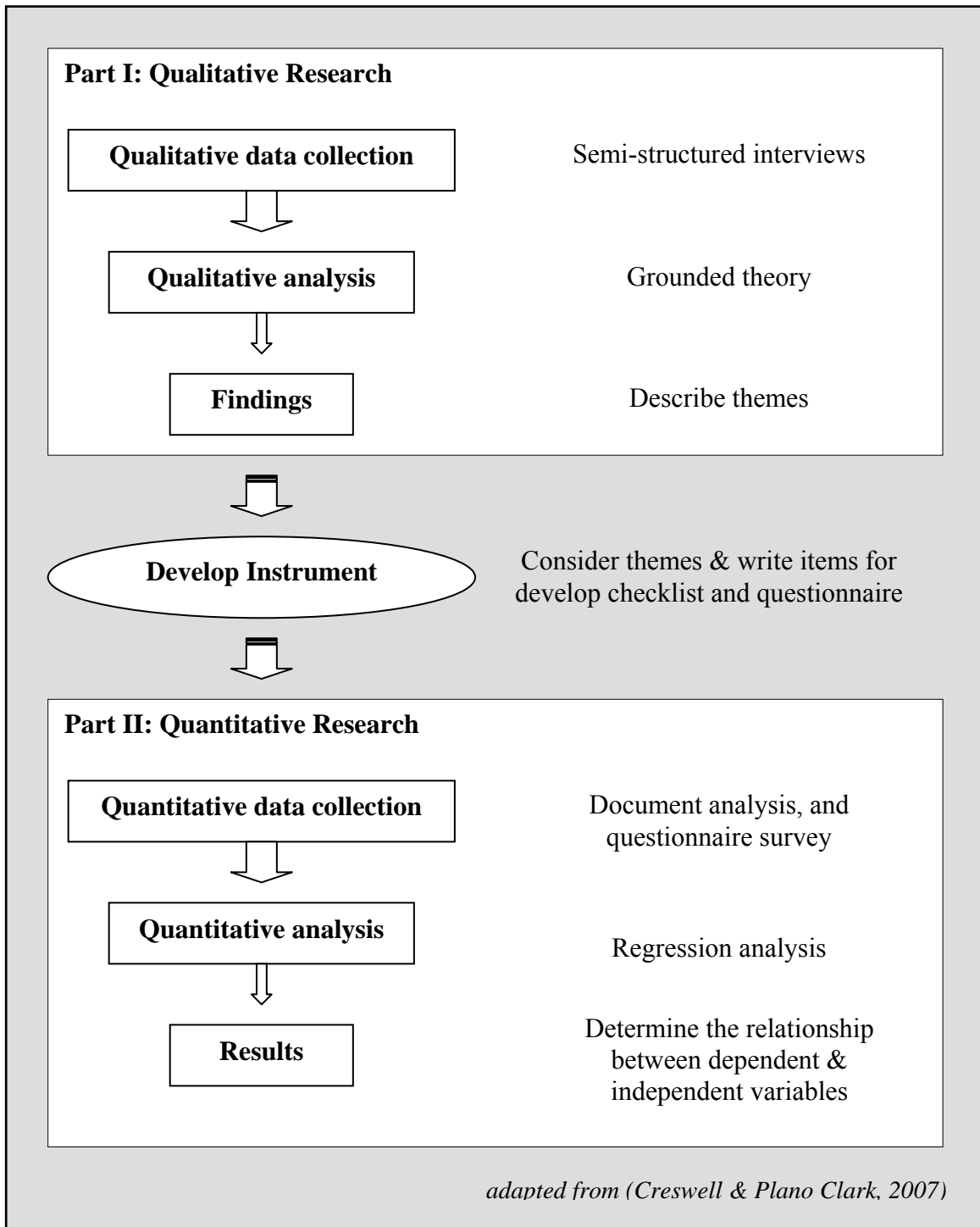
Figure 1-1: The sequential exploratory design: Instrument development model

As summarised in Figure 1-1, this study is divided into two phases: the qualitative and the quantitative study. This study begins with the qualitative phase in order to gain a better understanding of the phenomena, and which then informs the quantitative phase, particularly in the development of instruments to measure the level of disclosure. This research instrument and new variables, which are identified in the qualitative phase, are then implemented in the second phase.

This study employs three types of research method: interview, questionnaire survey, and document analysis. These methods are used to explore the phenomena of the corporate disclosure and the use of the information from the perspective of Thai financial intermediaries and to examine the effect of disclosure quality on the liquidity of shares traded on the Stock Exchange of Thailand.

The interview method was used to investigate the research question for the first part of the study. The findings from the interviews revealed the preferences of Thai financial intermediaries towards the sources and channels of information disclosure and their views about the quality of disclosure. The qualitative findings informed the second part of the study. This part involves the development of instruments to measure disclosure quality. Two approaches are taken. One is to obtain the opinions from securities analysts and fund managers about the quality of disclosures by the companies they are following using the questionnaire survey method. The other approach is to use documentary analysis to develop a disclosure index to measure the level of the information disclosure. The measures of disclosure are incorporated into regression models to explain the levels of liquidity of companies in the SET 100 Index.

1.5 Definition of terms

Definitions of terms used in this study are presented below:

'Disclosure quality' is a complex concept. In this study, information disclosure will considered as high quality if the companies disclose information that covers all items in the disclosure index. Therefore, disclosure quality refers to the extent to which companies disclose their information publicly.

'Investor confidence' the problems associated with information asymmetry has are widely addressed within the literature, with emphasise on the information gap between company insiders (informed) and outside (uninformed) investors Company insiders have access to more information about the company than outside investors.. It is possible that this group of informed investors may take advantage from this information gap. Therefore, information asymmetry in a capital market may cause the other, uninformed, investors to lose their confidence in the market and so lead to the reduction of the market liquidity.

'Market liquidity' refers to "*the ability to sell a security promptly and a price close to its value in frictionless markets*" (Ericson & Renault, 2006).

'Voluntary disclosure' refers to the information that a company discloses in excess of the minimum disclosure requirement of the Stock Exchange of Thailand.

'Private disclosure' is one of the information disclosure channels and refers to the personal contact between the financial intermediaries and a company's managements, such as telephone conversations with the company's top management, interviews, company visits or the contacts with the company's investor relation departments.

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'Public disclosure'   is the other information disclosure channel and refers to the information that a company publishes publicly, such as the company's annual report, the disclosure reports on additional information (Form 56-1), and the company's website.

'Big Four'   refers to the international accounting audit firms which includes PricewaterhouseCoopers, Deloitte Touche Tohmatsu, Ernst and Young, and KPMG.

'Analysts following'   refers to the number of the financial analysts that are following a company.

1.6 The structure of the thesis

The thesis is divided into two main parts. The first part of this thesis reports the qualitative study and the second part the quantitative study. The structure of the thesis is outlined in Figure 1-2.

Chapter 2 reviews the disclosure literature and contains the four main sections. The first section presents the theory of information asymmetry, while the second section reviews the theory of corporate disclosure. The third section reviews the literature on the key variables of this study which includes voluntary disclosure and stock market liquidity. The final section portrays the framework of this study.

Chapter 3 describes the context of the research. This includes the institutional arrangement within Thailand, and the information about the Thai capital market such as the trading process on SET and the SET's disclosure requirements.

Chapter 4 describes the research methodology for the qualitative part of the study. This chapter begins with a description of the research methodology. This includes the techniques used in collecting and analysing data. The research questions and the process in building a grounded theory are then explained. This is followed by a

description of the site selection, sampling procedure and the strategies adopted to address issues of validity and the reliability.

Chapter 5 provides the findings based on the interview data on the objectives of to gain an understanding about the corporate disclosure and the use of information by financial analysts and the fund managers in Thailand.

Chapter 6 presents the conceptual framework for the second, quantitative, part of the study which links between voluntary disclosure, the information intermediation, and stock market liquidity. This chapter also provides the previous evidence and the development of the research hypotheses for this part of the study.

Chapter 7 describes the research methodology for the quantitative part of the study. The chapter begins with a description of the specific research instruments and of the approaches used to test the hypotheses. It also describes the measurement of each of the variables, and the methods used to collect data for each variable. Finally, the chapter describes the sample selection procedures, the statistical techniques, and the strategies employed in order to enhance the validity and the reliability for this part of the research.

Chapter 8 presents the results of the hypothesis testing. In particular on the relationship between the level of information disclosure and stock market liquidity. The chapter also presents a sensitivity analysis of the results from this part of the study.

Chapter 9 presents the conclusions of the study. This chapter includes an overview of the research objectives and the research questions and the contributions to the literature of the research presented in the thesis.

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Qualitative Study

Chapter 4: Methodology

Chapter 5: Research Findings

Quantitative Study

Chapter 6: Conceptual framework & hypotheses development

Chapter 7: Methodology

Chapter 8: Empirical Results

Chapter 9: Conclusions
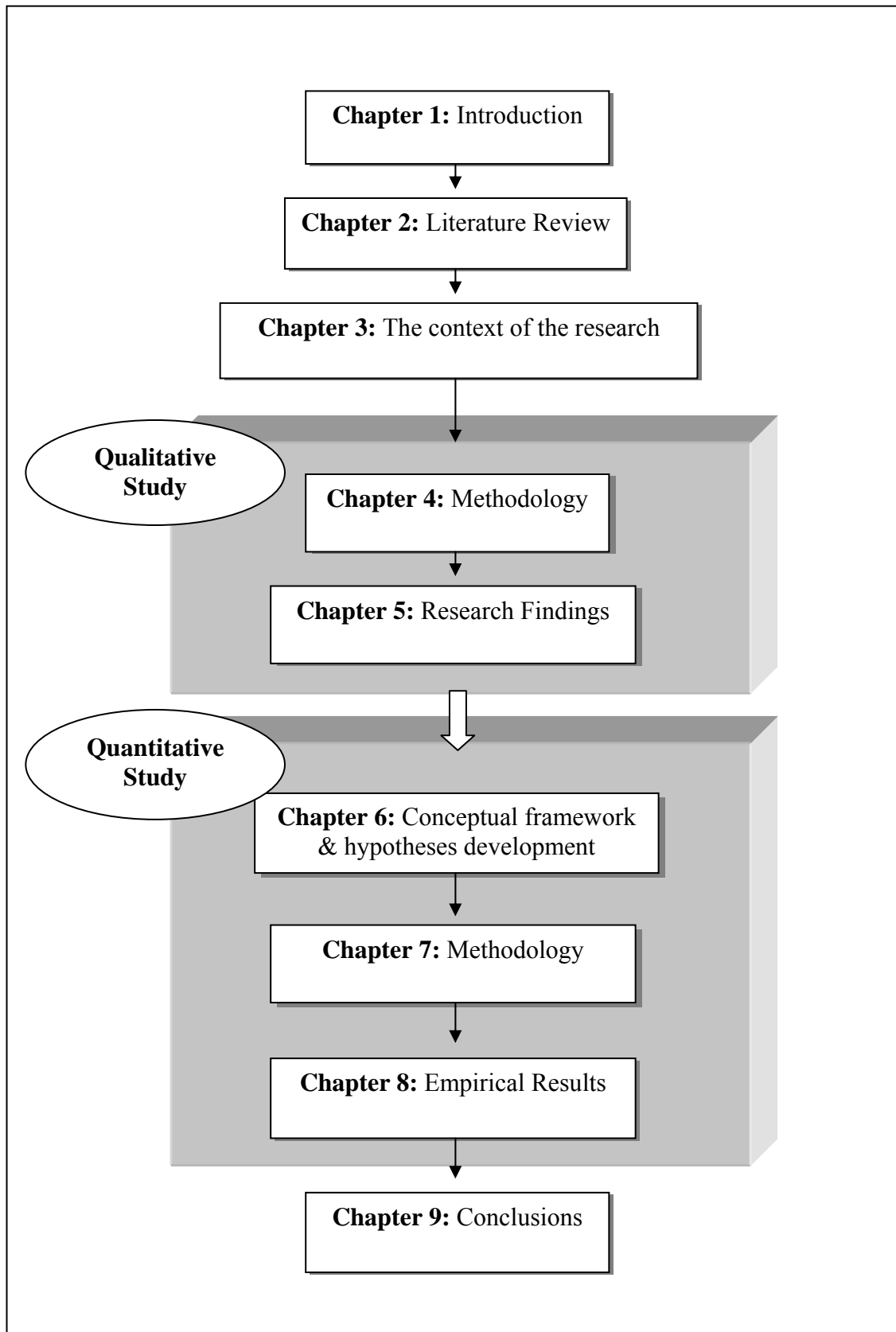
Figure 1-2: The research structure

Chapter 2

Literature review

The aims of this thesis are to gain an understanding of corporate disclosure and the use of information by financial intermediaries in Thailand, and to examine the relationship between the levels of disclosure and the liquidity of shares traded on the Stock Exchange of Thailand. This chapter presents a review of the relevant literature.

The chapter is divided into four main sections. The first section examines the problems of asymmetry between company managers and outside investors, and between well informed investors and less well informed investors. The cost and benefits of the corporate disclosure, the channels of information disclosure, and type of information disclosed are reviewed in the second section reviews. The third section reviews the literature on voluntary disclosure and market liquidity. This includes the incentives for company managers to disclose information voluntarily, the capital market consequences of voluntary disclosure, and the measurement of disclosure and market liquidity. The final section introduces the theoretical framework of this study.

2.1 Information asymmetry

The literature points to two main areas of information asymmetry: information asymmetry between different groups of investors, and information asymmetry between company managers and outsider investors.

In the context of capital markets, the information asymmetry arises when there is an information gap between the participants in the market, for instance when some of the market participants have more or better information about a company's value than other investors. This causes markets to become inefficient because uninformed, or less informed, investors cannot perceive the true economic value of the company. The better informed market participants have incentives to overstate, or understate, the true value of a company depending on whether they wish to sell or buy its securities. This reduces the confidence of uninformed investors when they decide to trade with the other investors who may have better, or private, information. Consequently, uninformed investors may lower the price at which they willing to buy, and increase the price at which they willing to sell, a security in order to prevent the losses from trading with the better informed investors. This introduces a bid-ask spreads into the market, reflecting the problems of trading with better informed investors (Leuz & Wysocki, 2008). The number of securities that less informed investors are willing to trade may also decrease as a consequence of information asymmetries, again reducing the liquidity of the securities. Figure 2-1 illustrates the sequence of effects that occur when the information asymmetry arises in the capital market.

Figure 2-1: The economic consequence of the information asymmetry
on the capital market

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Healy and Palepu (2001) identify a way to resolve the problems arising from information asymmetries between groups of investors. The first solution is to increase information disclosure. This will enable all investors to better estimate company value, and reduce the ability of better informed investors to profit by under, or over, valuing a company. Figure 2-2 illustrates the link between level of information disclosure and company value.
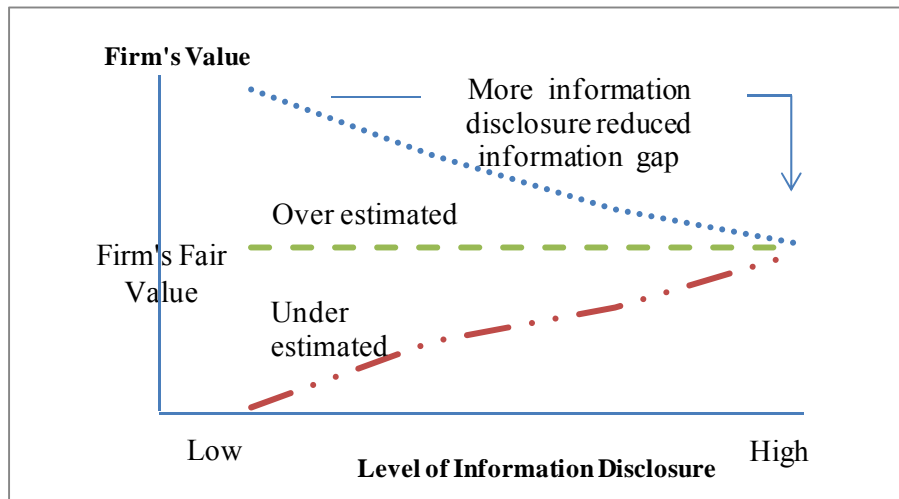
Source: Rikanovic, 2005

Figure 2-2: The link between the problem of misevaluation about the company' value, information asymmetry, and the extent of disclosure

In addition to information asymmetries between groups of investors, there are the information asymmetries between managers and outside investors. Bushman and Smith (2001) argue that the separation of corporate managers from outside investors involves an inherent conflict. Managers have an information advantage over the shareholders and other outside investors because they have information about company performance that is not known to outsiders. Therefore, shareholders and other outside investors cannot accurately evaluate and determine the value of decisions made by managers (Barako, Hancock & Izan, 2006). The literature suggests that voluntary disclosure is one of the solutions to mitigate this problem. Barako, Hancock and Izan (2006) propose that managers can provide additional credible and reliable information to the market in order to optimise the value of the company.

Healy and Palepu (2001) propose that the board of directors, whose role is to monitor and discipline management on behalf of shareholders, can also reduce this information gap between the managers and the outside investors. They also point to the role information intermediaries in obtain private information from the companies' managers, and in uncovering any misuse of company resources by managers.

Information asymmetry, market efficiency and agency problem

The literature on the efficient markets model show that the theoretical and empirical work concerned with the adjustment of security prices to the level of information disclosure. According to Fama (1970), the ideal of the efficiency market is:

> *'a market in which firms can make productive-investment decisions, and investors can choose among the securities that represent ownership of firms' activities under the assumption that security prices at any time "fully reflect" all available information.'* (Fama, 1970, p. 383)

Prior literature shows that there are three categories of market efficiency, namely weak, semi-strong, and strong form, which serves the useful purpose determining the level of information at which the hypothesis of market efficiency break down (Fama, 1970, 1991):

Firstly, weak form tests, which discussed only the relative information subset of interest historical price. This categorisation of the market efficiency addresses the question 'How well do past returns predict future returns?'

Secondly, semi-strong form tests. This categorisation of the efficiency market concerned about the speed of price adjustment to the publicly available information. It addresses the question 'How quickly do security prices reflect public information announcements?'

Finally, strong form tests, which concern whether any informed investor or insiders (e.g. managers) have superior information and can access to any information relevant for the formation of prices. This categorisation addresses the question 'Do any market participants have private information that is not fully reflected in the market prices?'

The strong form of market efficiency is related to the agency problem. The agency problem has an inherent information asymmetry between the agent and the principal. Managers are likely to have privileged access to information about the companies than investors, therefore, manager are more likely to be better informed about the companies's intrinsic value (Fama, 1991) and companies' information than outside/uninformed investors. The assumption that managers have better information relative to outside investors leads to a breakdown of the strong form of market efficiency (Fama, 1991).

As market liquidity is a component of market efficiency, increasing (decreasing) market liquidity should affect market efficiency. The literature on disclosure suggests that an increase in the level of information disclosed by companies can reduce the information asymmetry between market participants, and lead investors to better understand the companies. This enhances investor confidence, consequently improving market efficiency and increasing market liquidity.

2.2 Corporate disclosure

Corporate disclosure is considered as an important function of an efficient capital market (Healy & Palepu, 2001). Demand for financial reporting and disclosure arises from information asymmetry and agency conflicts between managers and outside investors, and between informed and less informed investors. As well as the benefits, there are also several costs of information disclosure.

On the positive side, there are several benefits of extensive corporate disclosure. The first benefit of disclosure is reducing information gap between market participants. When listed companies disclose more relevant information in the public domain, such as in their annual reports or on their companies' web site, it more difficult for some investors to become better informed than others. Since, all investors can easily access the companies' information, it is more costly for investors to become better informed than others. As a result, when private information is costly to access, only few investors, who have ability to pay for an excess information, are likely to be better informed investors. Therefore, increased corporate disclosure can mitigate the

probability of trading with a better informed counterparty. In other words, increased information disclosure can reduce the information asymmetry among the investors.

Second, the disclosure of more relevant and credible informational allows shareholders and outside investors to obtain a better understanding of a company and its value. This reduces the uncertainty about the companies' value, which in turn mitigates the potential information advantage that an informed trader might have over a less informed trader. The reduction in information asymmetry among the market participants may lead to a decrease in the cost of equity. Leuz and Wysocki (2008) identify two approaches to linking information asymmetry to the cost of equity capital. The first approach is that greater information disclosure reduces estimation risk or uncertainty that may influence the distribution of returns (e.g. Brown, 1979; Barry & Brown, 1984, 1985); whereas the second approach suggests that the cost of capital is reduced because higher level of information disclosure increases liquidity (e.g. Diamond & Verrecchia, 1991). Therefore, it could implies that increasing corporate disclosure will not only decrease the gap of information among the market participants by mitigating agency costs but also increase the companies' value by reducing the cost of capital (Lev, 1992).

Third, increased information disclosure can potentially improve corporate governance and managers' investment decisions, and support the corporate control mechanisms of the capital markets (Chen & Steiner, 2000; Chung & Jo, 1996). According to Bushman and Smith (2001), financial information on company performance is a direct input to corporate control mechanisms designed to discipline managers, to direct resources from "bad" projects and to prevent managers from expropriating the wealth of investors.

As well as benefits, there are costs of corporate disclosure. Lueuz and Wysocki (2008) suggest that there are two types of cost occur that arise when the companies disclose more information. First, there is the direct cost of corporate disclosure that can arise in a variety of ways. Direct costs of corporate disclosure can occur at the stage when companies prepare the information for their annual reports. It can also arise during the process of certification. Since, the listed companies have to follow the legal requirement from the Stock Exchange, their annual reports and other quarterly reports

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have to be audited. In addition, the direct costs of disclosure happen at the dissemination stage when the companies distribute their information to public. The other type of cost is the indirect costs of corporate disclosure. This can occur when listed companies information published for their investor is used, and taken advantage of, by the other parties, such as competitors, regulators, tax authorities, etc. Companies incentive to publish information may be reduced when the parties other than investors get benefits from the information. (Verrecchia, 1983).

Channels of information disclosed

Potentially companies have a variety ways of communication available to convey information to public and their investors. The literature on disclosure shows that there are two main channels of communication used by companies generally to disseminate information to capital markets.

The first channel is public disclosure. Companies may disclose their information through their financial statements, interim and quarterly reports, and other regulatory filings. The annual report is generally perceived as the main disclosure vehicle (Marston & Shrives, 1991) and as an important source of information for financial analysts (Langberg & Sivaramakrishnan, 2008). Most of the studies in this area use quantitative methods and relate disclosure quality to information asymmetry, or stock liquidity. The disclosure literature has shown that high quality public disclosure reduces information asymmetry and increases stock market liquidity. Bushee and Noe (2000), Leuz and Verrecchia (2000), and Welker (1995) argue that market liquidity could be measured by both trade-based and order-based measures i.e. transaction volumes and bid-ask spreads. Leuz and Verrecchia (2000) assert that increased accounting disclosures should reduce information asymmetry not only between companies and shareholders but also among investors.

The other channel is private disclosure. Companies can provide information through telephone conversations, meetings and presentations to privileged groups such as securities analysts and fund managers. The significance of private disclosure channels to analysts and financial institutions has been identified by academics and recognised

by UK policy makers (Holland, 1998). Most of the studies in this area use qualitative methods. The study of Marston (1996), Barker (1998), Holland and Doran (1998), Holland and Stoner (1996), and Holland (1997, 1998), have indicated that private corporate disclosure was the main channel which companies sought to disclose qualitative information on intangibles. Holland (2001) revealed how fund managers emphasised the significance of intangible or qualitative factors in company valuation.

Type of information disclosed

The information disclosed by companies can be divided into two broad categories, mandatory disclosure and voluntary disclosure (see, Marston & Shrives, 1991). Mandatory disclosures are those required by regulators such as government, stock exchanges and the accounting profession. The extent to which companies comply with legal and other regulatory requirements depends on the strictness of enforcement by these bodies.

Voluntary disclosure, disclosure of information in excess of the minimum, may arise where companies perceive the benefits of disclosure outweighing the costs (Gray & Roberts, 1989 quoted in Marston & Shrives, 1991). The research on voluntary disclosure focuses on the role of for capital markets. Companies tend to provide voluntary disclosures when they plan to raise finance in order to give investors explicit information and influence their perceptions (Healy & Palepu, 1993, 1995). Lang and Lundholm (1996) indicated that the provision of accounting information through voluntary disclosures gives financial analysts a better picture of companies' financial performance and capacity, and enables them to issue superior and more reliable forecasts.

To sum up, this section examined the benefits and costs of the corporate disclosure, as well as the channels and type of information disclosure. The following section deal with the literature on voluntary disclosure and market liquidity.

2.3 Literature on voluntary disclosure and market liquidity

Voluntary disclosure

Voluntary disclosure is one of the key variables in this study. The results from the first part of the study show that Thai securities analysts and fund managers perceive the benefits of additional information disclosure. They asserted that the companies can increase their transparency and restore investors' confidence by disclosing more voluntary information, which they see as leading to increase the stock market liquidity and higher share prices. The second part of the study therefore focuses on the voluntary disclosure in particular the information disclosed in the annual report.

This section reviews the literature on voluntary disclosure. It begins by looking at legitimacy theory and the incentives that motivate the companies to disclose information voluntarily to public. It then moves on to consider the capital market consequences of increased company disclosure. This is followed by an examination of the approaches to measuring voluntary disclosure and market liquidity.

Legitimacy theory

Legitimacy theory has its roots in the premise that companies signal their legitimacy by disclosing certain information in their annual report (Watson, Shrives & Marston, 2002). Legitimacy theory assumes a social contract or agreement between companies and society (Shocker & Sethi, 1974, quoted in Watson, Shrives & Marston, 2002), obliging companies to voluntarily disclose their activities if manager perceived that particular activities are of interest to outside investors (Guthrie, Petty & Yongvanich, 2004). Legitimacy theory is based on the idea that (i) companies need to legitimise their activities and (ii) the legitimacy process provides benefits for companies.

According to legitimacy theory, companies use information disclosure to: (i) show that they are operating in line with social demands by disclosing certain information, (ii) present a socially responsible image and (iii) gain or maintain social legitimacy

(Patten, 2002). A number of researchers have used legitimacy theory to explain disclosures in environmental and social reporting (Guthrie & Parker, 1989; Patten, 1992; Deegan & Gordon, 1996). By disclosing information voluntarily, managers can communicate certain information with outside investors. This, in turn, enhances investor confidence in company performance.

Motives for voluntary disclosure

Healy and Palepu (2001) identify six hypotheses to explain companies' decisions to disclose additional information voluntarily. These are the capital markets transactions, the corporate control, the stock compensation, the litigation cost, the management talent signalling and the proprietary cost hypotheses. Each of these hypotheses is examined in turn.

i.) Capital markets transactions hypothesis

The capital markets transactions hypothesis suggests that companies are inclined to provide voluntary disclosures when they plan to issue public debt or equity or to acquire another company in order to give investors explicit information and influence their perceptions (Healy & Palepu, 1993, 1995). Managers do so because they want to reduce the gap of information between insiders and outside investors, thereby reducing the company's cost of external financing. This hypothesis is supported by empirical studies by Lang and Lundholm (1993, 2000). They document that when companies are going to issue their securities there is a significant increase in the analysts' ratings of disclosure six months before the offering. Another study by Healy, Hutton and Palepu (1999) shows that companies with increased analyst ratings of disclosures have an abnormally high frequency of subsequent public debt offers.

ii.) Corporate control contest hypothesis:

The corporate control contest hypothesis is motivated by evidence that boards of directors and investors hold managers responsible for current stock performance. Managers tend to increase voluntary disclosure in order to make outside investors

aware of their managerial ability and avoid misevaluation of their actions and performance. There is evidence to show that CEO turnover is associated with poor stock performance (Warner, Watts & Wruck, 1988; Weisbach, 1988). Given the risk of job loss accompanying poor stock and earnings performance, therefore, managers disclose voluntary information to mitigate the likelihood of misevaluation and to explain away poor earnings performance.

iii.) Stock compensation hypothesis

Managers are often rewarded with stock-based compensation plans, for example, stock option grants, and stock appreciation rights. The stock compensation hypothesis suggests that these plans provide incentives for managers to disclose additional information about their performance for several reasons. Firstly, managers who interested in trading their stock will have incentive to disclose some private information in order to meet restrictions set by insider trading rules. Aboody and Kaznik (2000) report that managers appear to plan the timing of disclosing good and bad news in order to maximise their compensation. Moreover, they tend to disclose more voluntary information in order to correct any misunderstanding about the valuation of their stock prior to the expiration of their stock options awards. Secondly, managers disclose additional information because they want to mitigate the contracting costs associated with the grant of stock to new employees.

iv.) Litigation cost hypothesis

The litigation cost hypothesis suggests that managers tend to disclose more information voluntarily in order to reduce the cost of litigation that can arise when companies provide inadequate information or untimely disclosures (Skinner, 1994). Therefore, they may be able to manage the timing of the disclosure of good and bad news, so that litigants and courts would only focus on whether there were delays in the disclosure of bad news (Healy & Palepu, 2001). Skinner (1994) documents that companies with bad earning news are more likely to disclose more additional information than companies with good news. Moreover, he finds that the litigation costs are lower for the companies that pre-disclose bad news than companies that do not.

v.) Management talent signalling hypothesis

The management talent signalling hypothesis suggests that companies tend to disclose voluntary disclosure and updated earning forecasts because they want to show investors that they are aware of companies' economic conditions and able to quickly respond to changes (Trueman, 1986). This would give a good sign to investors about managers' abilities, and would positively affect the stock returns and the market value of the company (La Porta et al., 2000; Reese & Weisbach, 2002). According to Healy and Palepu (2001), there is no empirical evidence to either support or refute this hypothesis.

vi.) Proprietary cost hypothesis

The proprietary cost hypothesis suggests that companies tend to disclose information only if that information will be of benefit to their competitive position. If there is potential threat that will damage their competitive position in product markets, companies will have an incentive not to disclose information (Verrecchia, 1983; Wagenhofer, 1990; Darrough & Stoughton, 1990; Feltham & Xie, 1992; Darrough, 1993; Gigler 1994). In contrast to the other hypotheses, the proprietary cost hypothesis assumes that there are no conflicts of interest between managers and outsiders. Consequently, the literature predicts that voluntary disclosure will always be credible. This hypothesis is consequently mainly focused on the economic forces that constrain full disclosure. According to Hayes and Lundholm (1996), companies tend to disclose aggregate information about their performance across business segments in order to conceal information from their competitors that might be damage their competitive positions. Companies with declining profitability and lower variability in profitability are more likely to provide additional information voluntarily (Piotroski, 1999).

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Capital market consequences of voluntary disclosure

The prior literature (see, for example, Healy & Palepu, 2001; Leuz & Wysocki, 2008) shows that there are several kinds of effect that can occur in capital markets when companies disclose more information voluntarily. These are a reduction in information asymmetry and agency costs, improved stock liquidity, reduction in the cost of capital and enhancement of company value, and increased information intermediation. Further, there is the possibility of manipulation of information. Each of these effects is examined below.

i.) Reduced information asymmetry and agency costs

The first benefit of increasing level of voluntary disclosure is to reduce information asymmetry and agency costs. Previous studies of the role of voluntary disclosure show that voluntary disclosure reduces information asymmetry between the companies and their investors. Welker (1995), Healy, Hutton and Palepu (1999), and Leuz and Verrecchia (2000) indicate that information asymmetry, measured by the bid-ask spread, is reduced when the level of information disclosure is increased.

Moreover, theory suggests that decreasing of information asymmetry, in particular between managers and outside investors, allows the companies to reduce the agency costs. However, the empirical evidence on the level of voluntary disclosure and the agency costs is mixed. For example, Low (1996) finds a negative relationship between disclosure and agency cost proxies such as managerial ownership and investment opportunities, and a positive relationship between disclosure and leverage, while Chow and Wong-Boren (1987) find no significant relationship between leverage (a proxy for agency costs) and financial disclosure in annual reports.

ii.) Improved stock liquidity

The second benefit of higher level of voluntary disclosure is greater liquidity of company's securities. According to Healy and Palepu (2001), Dimond and Verrecchia (1991), and Kim and Verrecchia (1994), voluntary disclosure can reduces information asymmetries among informed and uninformed investors. Therefore, when companies

disclose more voluntary information or higher level of disclosure, investors will get more information in order to make decisions about the appropriate price of the companies' securities. As a result, companies are more likely to attract more investors because the investors will be confident that any stock transactions occur at a fair price. This in turn leads to an improvement of the companies' stock liquidity.

The literature provides evidence that extensive voluntary information can reduce information asymmetry and increase stock market liquidity. Welker (1995) examines the association between the stock market liquidity and corporate disclosure policy, and finds that the greater the information disclosure, the lower the level of bid-ask spreads. Healy, Hutton, and Palepu (1999) investigate whether companies benefit from disclosing more voluntary information by examining changes in bid-ask spreads and the analyst disclosure rating. Their results indicate that increase their disclosure rating is followed by improved stock liquidity.

Leuz and Verrecchia (2000) examine the economic effects of companies listed on German Stock Market increasing their information disclosure. They find that the information asymmetry for companies listed on the Neuer Market, who report under the International Accounting Standards and require higher disclosure information, is lower than for listed companies that report under the German Accounting Standards. Another study that provides strong support for this hypothesis is Heflin, Shaw and Wild (2001). They investigate the relationship between disclosure quality and market liquidity and report that disclosure quality is important for market liquidity. Frost, Gordon and Hayes (2002) also examine the relationship between the disclosure system and market liquidity on different stock exchanges, and find that the strength of the disclosure system is positively associated with the market liquidity.

iii.) Reduced cost of capital and enhanced the company's value

The third benefit of extensive voluntary disclosure is to lower the company's cost of capital and enhance the company's value. Healy and Palepu (2001) suggest that the information problem between managers and investors in capital markets creates an incentive for managers to disclosure information voluntarily in to reduce cost of capital.

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There are little literature on the effect of greater voluntary disclosure and the cost of capital. The first study that attempts to provide evidence for the cost of capital hypothesis is Botosan (1997). She studies the association between disclosure level and the cost of equity capital by regressing company specific estimates of cost of capital on the market beta, company size and a self-constructed measure of disclosure level. Her measure of disclosure level is based on the quantity of voluntary disclosure for one industry. The results for companies that attract a low analyst following indicate that higher disclosure level is associated with a lower cost of capital. However, for companies with a high analyst following there is no evidence of an association between disclosure level and cost of capital.

Leuz and Verrecchia (2000) suggest that information asymmetry between the companies and their shareholders will create costs by introducing adverse selection, which leads to lower liquidity of the companies' securities. To overcome this problem, companies have to issue their capital at a discounted price. Discounted prices result in lower proceeds to the companies and hence higher costs of capital. Therefore, Leuz and Verrecchia suggest that a commitment to expand the level of disclosure will reduce the possibility of information asymmetry which, in turn, should reduce the discount at which companies' securities are sold, and hence lower the costs of issuing capital.

Finally, Botosan and Plumlee (2002) evaluate the association between the cost of equity capital and levels disclosure in the annual report, timely disclosure, and investor relations activities. They use the AIMR score and the dividend discount model to estimate the cost of capital. They find that the cost of capital decreases with higher disclosure levels in the annual report, but increases with timeliness of the disclosures. However, they find no association between the cost of capital and the level of investor relations activities.

iv.) Increased information intermediation

The fourth benefit of expanded levels of voluntary disclosure is increase information intermediation. As the above studies show that voluntary disclosure reduces information gap among investors, which effect on the stock market liquidity.

Increased stock market liquidity should make the stock more attractive to investors. Consequently, the number of the financial intermediaries following the company should increase.

According to Bhushan (1989) and Lang and Lundholm (1996), the extensiveness of accounting information through voluntary disclosures gives financial analysts a better picture of companies' financial performance and capacity, which can enables them to issue superior and more reliable forecasts. Therefore higher level of voluntary information disclosure allow the financial intermediaries to deliver high quality information, which in turn lead to increasing demand for the analysts services.

Lang and Lundholm (1993) find that companies with more informative disclosure have larger analysts following, less dispersion in analyst forecasts, and less volatility in forecast revisions. Francis, Hanna and Philbrick (1998) find an increase in analyst coverage for companies making conference calls. Healy, Palepu and Hutton (1999) show that companies with increased the analyst ratings of disclosure have increases in institutional ownership and analysts following. This evidence supports the increased information intermediation hypothesis.

However, Healy and Palepu (2001) claim that public voluntary disclosure can also prevents financial intermediaries from distributing managers' private information to investors. These could lead to a decline in demand for analysts' services. Therefore, the effect of voluntary disclosure on information intermediation, in particular analysts following, should be answered empirically.

v.) Manipulated the financial markets

Another benefit of increasing voluntary disclosure is that it improves the share prices. Bushee and Leuz (2003) indicate that disclosure can reduce the companies' cost of capital only if it is credible and not self-serving. As discussed, voluntary disclosure has a possible relationship with company value. Consequently, any information that is disclosed by a company will effect on the value of the company. Thus, there is a possibility that the managers will have incentives to manipulate their company's value through self-serving disclosure. Security regulators often claim that companies engage in voluntary disclosure to artificially increase a companies' share price.

Voluntary disclosure measures

One of the most important limitations encountered on disclosure studies is the difficulty in gauging the extent of voluntary disclosure (Healy & Palepu, 2001). According to Cooke and Wallace (1989) 'disclosure is an abstract concept that cannot be measured directly. It does not possess inherent specifications by which one cannot indicate its intensity or quality, like the capacity of a car'(p.51). For this reason, many accounting researchers endeavour to discover the appropriate approach to measure the quality and the level of voluntary information disclosure. The following section discusses the concept of the quality of disclosure and the approaches to its measurement.

The concept of quality of disclosure

Quality of disclosure is a complex concept, and has a multifaceted and subjective nature (Beattie, McInnes & Fearnley, 2004). Empirical evidence on the corporate disclosure does not make a clear distinction between quality and quantity of information disclosure. Previous studies on this topic generally assume that the quantity of information disclosed is related to the quality of information disclosure. Consequently, the measure of quantity of information disclosure (or disclosure index) is commonly used as a proxy for disclosure quality. However, the use of the quantity of disclosure as a proxy for quality of disclosure is still questioned and has been opened on the need to develop more effective measures (Core, 2001).

Several approaches to measure disclosure quality are employed and be found in the extant literature on disclosure. Some of the studies measure disclosure quality by using the number of words or sentences included in the annual report (Marston & Shrives, 1991) as the unit of analysis. While the other studies use a disclosure index which considers the scope of information disclosure, rather than a number of sentences, as a proxy for disclosure quality (Singhvi & Desai, 1971; Cooke, 1989; Wallace, Naser and Mora, 1994; Haniffa & Cooke, 2002). Different findings reported in the literature may, at least in past, reflect different ways of measuring the quality of disclosure.

Voluntary disclosure approaches

Healy and Palepu (2001) note that several methods have been used to measure the level of voluntary disclosure. These include management forecasts, analysts rating, metrics based on the The Association of Investment Management and Research (AIMR) database and disclosure index, self-constructed measures (e.g., The Center for International Financial Analysis and Research (CIFAR), and Standard and Poor's (S&P) scores.

The objective of this study is to examine the level of the voluntary information disclosed in published annual reports. According to Bettie, McInnes and Fearnley (2004), there are two main approaches generally employed when researching accounting disclosure. The first approach is subjective ratings and the other approach is the disclosure index. These disclosure approaches are represented in Figure 2-3.

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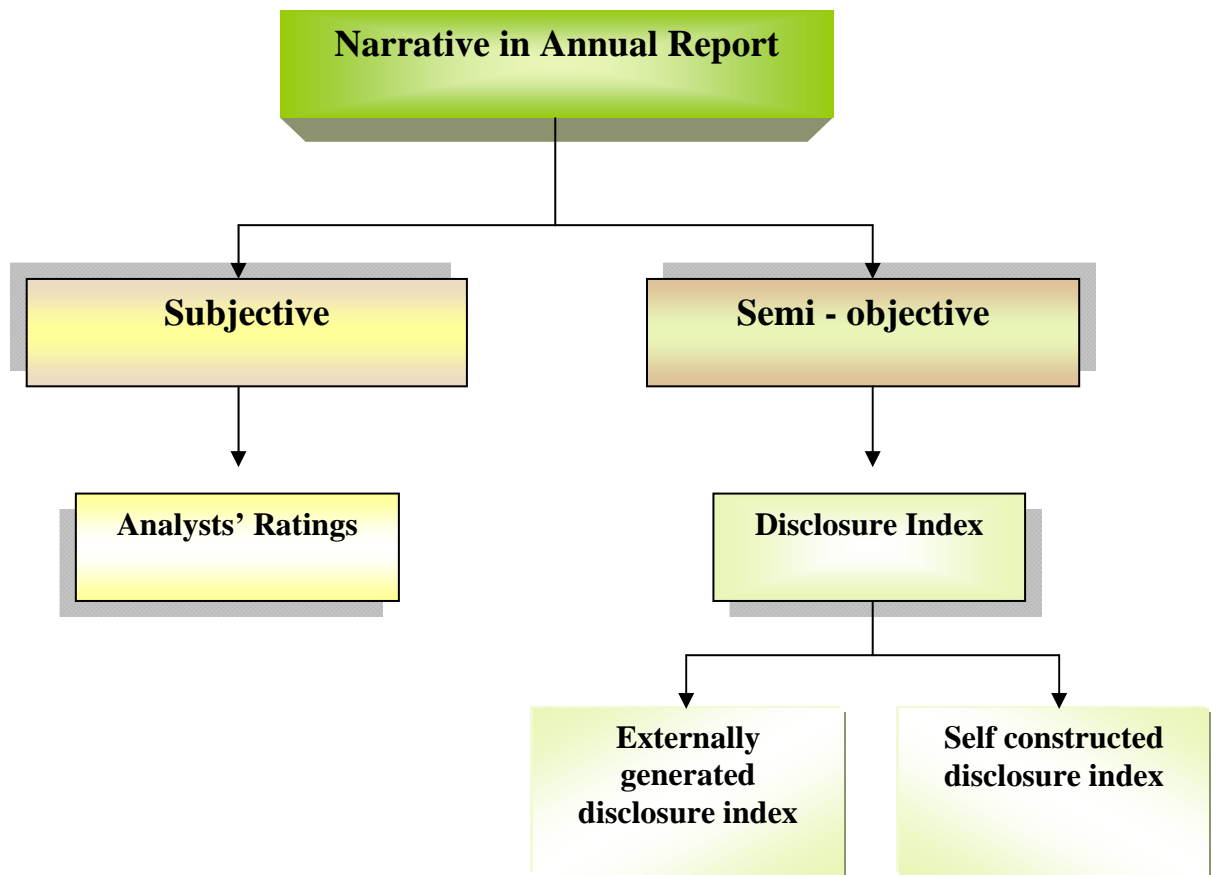
Adapted from (Beattie, McInnes & Fearnley, 2004)

Figure 2-3: Approaches to analysis of narratives in annual report

i.) The Subjective or analyst rating approach

The first approach is the subjective approach which is based on financial analysts' perceptions. This approach is primarily uses questionnaire surveys of financial analysts to rate specified accounting items in accordance with their degree of importance for decision making process. Most prior studies on corporate disclosure (Lang & Lundholm, 1993; Welker, 1995; Healy, Hutton & Palepu, 1999; Lundholm & Myers, 2002) use analysts' assessment of companies' disclosure practices provided by the Association of Investment Management and Research (AIMR[1]), formerly known as the Financial Analysts Federation (FAF). Because these disclosure ratings capture a broad range of disclosure activities, including information from the annual report, the quarterly report and information from investor relations activities, the ratings are viewed as a proxy for the level of companies' disclosure. Moreover, these widely used ratings arguably capture the usefulness of companies' information disclosures as perceived by expert users of this information.

There are several limitations of the AIMR rating. The first limitation of this rating is it designed specifically for large US companies only and so is not available for non-US companies. In addition, Botosan (1997) notes that a sample based on these measures may be biased towards larger companies with extensive analyst coverage. Another limitation is this approach is that it provides financial analysts' perceptions of the overall financial disclosure rather than a direct measure of the actual disclosure. Moreover, the AIMR discontinued its disclosure rankings in 1997 after rating fiscal year 1995. Finally, there are some questions about potential bias in the ratings process.

Healy and Palepu (2001) also identify additional limitations of the AIMR database, noting that '…. it is unclear whether the analysts on the AIMR panels take the rating seriously, how they select companies to be included in the ratings, and what biases they bring to the ratings' (p.427). There are no disclosure ratings in other countries,

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[1] The AIMR scores are based on analysts' perception of value-relevant information from both mandatory and voluntary disclosure. Thus, these scores arguably capture the usefulness of companies' disclosure as perceived by a person who has high skill and knowledge of this information. Every year AIMR publishes a disclosure score for almost 500 companies, comprising 22 different industries based on a number of financial analysts assessment of the selected industries disclosure policy.

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including Thailand, that resemble the AIMR ratings. As a result, the AIMR rating cannot use as the proxy for the level of information disclosure for this study.

ii.) The Semi – objective or the construction of disclosure index approach

An alternative approach is the construction of disclosure index. This may be of mandatory, voluntary, or total disclosure of accounting and certain company characteristics. This approach generally uses a checklist of information that may be disclosed in companies' annual reports. There are two general approaches to index construction, externally-generated disclosure scores, and self-constructed disclosure scores.

a.) The externally-generated disclosure indices

The first approach to the construction of a disclosure index is the externally-generated disclosure index. Some previous studies use the CIFAR[2] index (see, for example, Hope, 2003; Bushman, Piotroski & Smith, 2004) which measures the average accounting disclosure activity of large companies across a range of countries by using information disclosed in the companies' annual reports as the proxy for a companies' corporate disclosure.

Other studies (see, for example, Khanna , Palepu & Srinivasan, 2004) use the Standard and Poor's (S&P) Transparency and Disclosure[3] scores of international companies' disclosures as the disclosure proxy. Both the CIFAR and S&P scores are

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[2] The CIFAR score is a disclosure index for different countries that scores the annual reports of at least three companies from each country. There are ninety accounting information items in this index, so each company can obtains a score from 0 to 90 and the higher number of accounting information items indicating the more disclosure for the company. Therefore, many prior literatures has been used the CIFAR score as a proxy for the accounting quality at the country level. For instance, Bushman, Piotroski and Smith (2005) use the CIFAR score as a proxy for the quality of financial report and assuming that countries with higher CIFAR scores have relatively greater financial disclosure levels. In another study, La Porta et al (1998) indicate that the common laws countries which tend to have stronger investor protection institutions, have significantly higher CIFAR scores.

[3] S&P launched the T&D rating in 2001, beginning with rating more than 300 large and liquid companies in emerging markets. This index examines information from the company annual report only. There are 98 disclosure items which divided into three sub-categories including the information related to ownership structure and investor rights, information related to financial transparency and information disclosure, and information related to board and management structure and process. Thus, the possible score for this disclosure index range from 0 to 98, with a higher number indicating more disclosure.

an international disclosure index which arguably capture the quality of accounting information disclosure at the country level. Therefore, these scores are benefit for the cross country studies. However, these international disclosure scores have the limitation that each rating uses only a few Thai companies. Therefore, it is inappropriate to use these ratings as the proxy for the level of corporate disclosure for this study.

b.) The self-constructed disclosure index

The second approach to the construction of a disclosure index, the self-constructed disclosure index, is used as the main research instrument for this study. Many previous studies (see, for example, Cooke, 1989, 1991; Meek, Roberts & Gray, 1995; Hossain, Tan & Adams, 1994; Botosan, 1997; Ferguson, Lam & Lee, 2002; Haniffa & Cooke, 2002; Francis, Nanda & Olsson 2008) use the self-constructed disclosure index as a proxy for the level of information disclosure, in particular, to measure the level of the information disclosed in the company's annual report. The approach generally uses a checklist in order to gauge the level of information disclosure. There are some limitations of using this approach, specifically the selection and coding of the relevant disclosure items are subjective, and this approach captures only the existence of particular disclosures rather than the quality of those disclosures.

However, there are several benefits of using the self-constructed disclosure index as the main proxy for a company's voluntary disclosure. The first benefit is that this approach allows the researcher to design and construct the disclosure items in the checklist based on the objective of the study. Healy and Palepu (2001) and Francis, Nanda and Olsson (2008) note that there is greater confidence that self-constructed disclosure index measures captures what they intend to capture. As this study emphasise on the voluntary disclosure, so the disclosure items in the checklist should capture the voluntary disclosure items. Another benefit of using the self-constructed disclosure index is that this approach can be calculated for any company. Therefore, this approach is different from the externally-generated approach which tends to be skewed toward large companies.

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Market liquidity

The key variable of this study is market liquidity. This section reviews the concept of market liquidity and its measurement. 'Liquidity' in the sense of "market liquidity" refers to the ability to transact quickly in capital markets with a small impact on prices or without any material effect on prices. Market liquidity is generally perceived as desirable because of the multiple benefits. However, there is no single universally accepted definition of liquidity, and so it is necessary to consider the ways in which the concept is used.

Liquidity characteristics

According to Sarr and Lybek (2002, p.5), there are five characteristics to market liquidity: tightness, immediacy, depth, breadth, and resiliency.

- *Tightness* refers to low transaction costs, such as the bid-ask spreads, the difference between buy price and sell price.

- *Immediacy* refers to the speed of execution, how quickly trades of a given size can be done at a given cost. In it reflects the efficiency of the trading, clearing and settlement systems.

- *Depth* is refers to the number of securities that can be traded at given bid and ask prices.

- *Breadth* means that orders are both numerous and large in volume with minimal impacts on prices.

- *Resiliency* is how fast prices revert to former levels after they changed in response to large order flow imbalances initiated by less informed investors.

These different dimensions are to some extent overlapping. For example, if the traders are patient and can wait longer to trade their securities, they may obtain better prices and/or may be able to trade a large amount of their securities at a given prices.

In this case tightness and depth depend on immediacy. From the given example it is clear that these terms may interact with each other and do not stand independently on their own. Consequently, there are varieties of measuring approach employed in the literature in attempt to gauge the market liquidity.

Liquidity measurement

Sarr and Lybek (2002) propose that liquidity measures can be classified in to four categories: transaction cost measures, volume based measures, price based measures, and market impact measures. Each liquidity measure will be discussed in details below.

- *Transaction cost measures* capture the costs of trading financial assets and trading frictions in secondary markets (e.g. bid-ask spreads)

- *Volume-based measures* capture the volume of transactions (e.g. trading volume, and trading frequency)

- *Price-based measures* capture orderly movements towards equilibrium prices to mainly measure resiliency

- *Market-impact measures* attempt to differentiate between price movements due the degree of liquidity from other factors, such as general market conditions or arrival of new information to measure both elements of resiliency and speed of price discovery.

The bid-ask spread is a more commonly used measure for the market liquidity. It directly measures the cost of executing a small trade, with the cost typically calculated as the difference between the best bid and ask prices. Four factors may influence the bid-ask spread: order processing costs, inventory holding costs, asymmetric information costs, and oligopolistic market structure costs. One advantage for this measure is that the data for this measure are widely available on a real time basis. This makes the measure easy and quick to calculate and, as a result, it is commonly used as an indicator of the quality of market functioning. Fleming (2003) identifies the bid-ask spread as one of the most appropriate liquidity indicators due to its high degree of correlation with other measures, such as price impact and benchmark/ non-benchmark

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yield spreads. Similarly, D'Souza, Gaa and Yang (2003) also find evidence that bid-ask spreads are one of the most appropriate indicators of liquidity, consistently exhibiting the expected relationship with price volatility and other liquidity measures. Only one drawback for the bid-ask spread is that bid and ask quotes are only good for limited quantities and periods of time. Therefore, the bid-ask spread only measures the cost of executing a single trade of limited size. Despite its drawbacks, this measure remains the most commonly used and most appropriate measure of market liquidity.

2.4 The framework of the present study

The disclosure literature suggests that higher levels of information disclosure reduce the information asymmetry between informed and uninformed investors (Bushman & Smith, 2001) which would otherwise lead to market inefficiencies and the mispricing of companies' stocks (Diamond & Verrecchia, 1991). Reduction in the information gap between the informed and less informed investors can restore less informed investors' confidence, which in turn may affect market liquidity. The reduction of uncertainty and information asymmetry between informed and uninformed investors, and between companies and outside investors, would also tend to reduce the cost of capital. Figure 2-4 illustrates the sequence of effects that occur when the listed companies increase its level of information disclosure.
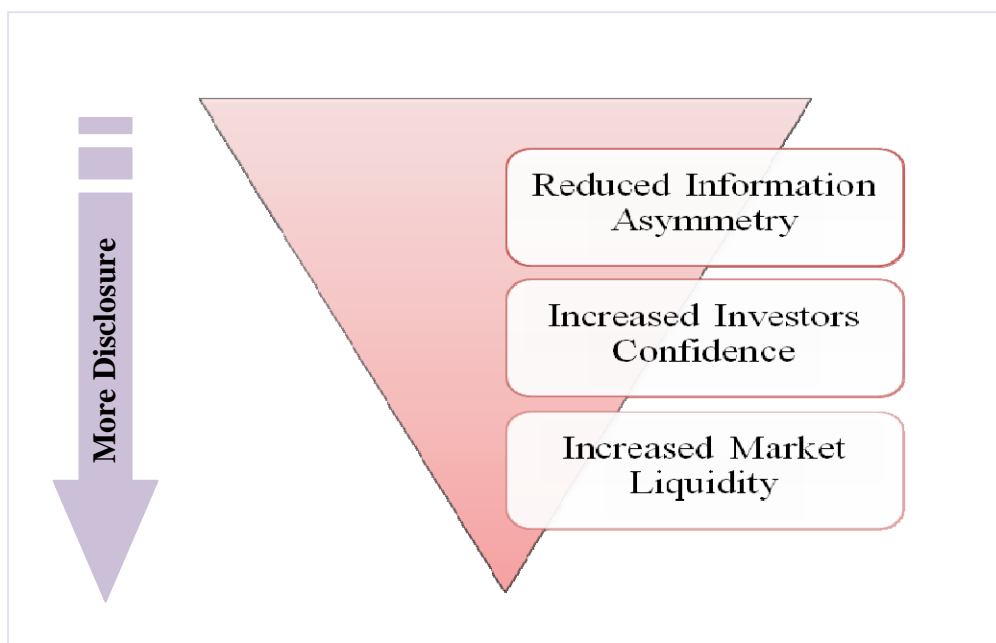
Figure 2-4: The economic consequence of extent disclosure on the capital market

The theoretical framework link between market liquidity, as measured by the bid-ask spread, and disclosure is illustrated in Figure 2-5. The literature points to the favourable effect of increased corporate disclosures on information asymmetry, and on the stock market liquidity. Prior empirical studies have shown that voluntary disclosure is likely to convey material information to the market as reflected in significant and high stock market reactions. This could increase the market efficiency, and reduce information asymmetries between the managers and outside investors, and between the groups of investors. When companies disclose more information voluntarily, the information gap between more informed and less informed is reduced, and less informed investors will obtain a better understanding about the company. Consequently, they will able to make an accurate evaluation of a company's true value.

In addition, increased voluntary disclosure will affect to a company's transparency. When the company discloses more voluntary information, it increases transparency and restores the investors' confidence. It seems like most investors believe that transparent companies tend to reveal their true value, which attracts investors who willing to pay at the fair price for the companies' securities. This may result in smaller or narrow bid-ask spreads.

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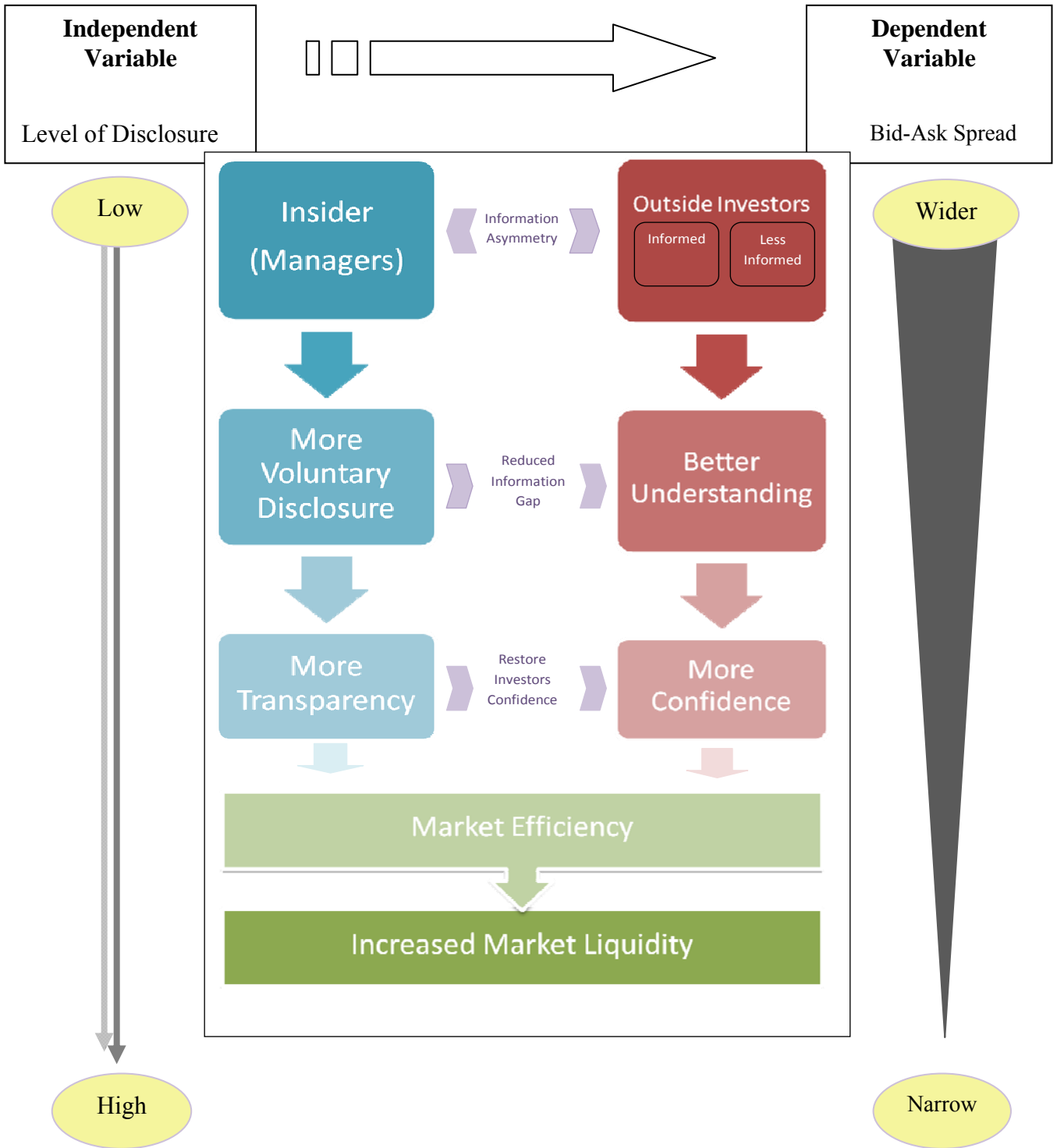
Figure 2-5: The theoretical framework between corporate disclosure

and information asymmetry

As indicated in the previous chapter, this study employs the sequential exploratory mixed method designs with two main parts, a qualitative study and quantitative study. The first part, the qualitative study, aims to explore and obtain a better understand of corporate disclosure and the use of information from the perspective of financial intermediaries. The results from this qualitative study can be used to develop the research instruments, identify new variables, and scope the framework for the quantitative study.

The main objective for the second part, the quantitative study, is to examine the effect of the level of voluntary disclosure on the liquidity of shares traded on the Stock Exchange of Thailand. Following from the existing literature, it is proposed that the greater the level of voluntary disclosure by companies, the less the information asymmetry among market participants. This leads to the restoration of the investors' confidence and an increase in stock market liquidity. The benchmark test for this study aims to investigate the relationship between the level of voluntary information disclosure and stock market liquidity for the sample listed on Thai capital market. The dependent variable for this study used is the effective relative bid ask spread as a proxy for the market liquidity and the level of voluntary information disclosure is the independent variable.

2.5 Summary

The main objective of this chapter was to review the theoretical relations between corporate disclosure and information asymmetry which is the benchmark test for this study. The discussion begins with the theory of information asymmetry, and corporate disclosure. Then, move on to the literature for the key variables of this study which including the voluntary disclosure and market liquidity. Following by the conceptual framework of this study, which link between the voluntary information disclosure and stock market liquidity. The following chapter will provide the context of the research which includes the characteristics of the institutional in Thailand; such as the legal and the institutional environments, and background of Thai capital market.

Chapter 3

The context of the research

This study has two main objectives. The first is to gain an understanding of corporate disclosure and the use of information by financial intermediaries in Thailand, and the second is to examine the relationship between levels of disclosure and the liquidity of shares traded on the Stock Exchange of Thailand. As indicated in Chapter 2, there are only a few studies of the relationship between the level of information disclosure and the stock market liquidity. These studies are set in the US and other major developed countries that have developed markets. There is insufficient evidence on how theories formulated for companies operating in major developed countries can be applied to companies outside these markets, and in countries with different legal environments and institutional settings. To put this study into context, it is necessary to have an understanding of the characteristics of Thailand. In particular, the legal protection offered to investors, the institutional arrangements in Thailand, the structure of Thai capital market, and the disclosure requirements of the Stock Exchange of Thailand.

This chapter divided into two main sections. The first section deals with the institutional environment in Thailand, which includes the legal of investor protection

and the organisation structure. The second section presents the overview of the Thai capital market. This section begins with a history of the Stock Exchange of Thailand (SET), the market types and the trading protocol in Thailand, and the disclosure requirements for Thai listed companies.

3.1 The characteristics of the institutional structures in Thailand

The quality of financial reporting and the level of information disclosure are seen to depend on the characteristics of the institutional setting of a country. Ball, Robin and Wu (2003) provide empirical evidence at the country level that the quality of information disclosure is driven by incentives rather than accounting standards. They further argue that incentives are driven by the companies' institutional setting. They also note a number of features of the institutional in Thailand that affect the quality of financial reporting. These include the influence of controlling families on the demand for public disclosure, political influences on financial reporting, especially in relation to the BASP (the Board of Supervision of Auditing Practices), the close link between financial reporting and reporting for tax purposes, and weak enforcement of regulations.

This section describes the characteristics of the institutional setting in Thailand, including the ownership structure, the type of legal rule, the extent to which laws are enforceable, and the insider trading laws.

The institutional environment in Thailand

The ownership structure of a company can affect the implications of agency relationships. There is evidence to show that companies in the East Asian countries are usually owned by a small number of families (Wiwattanakantang, 1999; Claessens & Fan 2002). This is associated with better performance. However, the higher level of family ownership and shareholder concentration can lead to high expropriation of minority shareholders interests.

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In companies in which there is a high level of family ownership, business is based more on informal relationships than on formal legal contracting. Family members will have a private network and communicate with other shareholders within the same family. This reduces the demand for public disclosure (Ball, Robin & Wu, 2003). In this situation, the insiders or the family members will gain benefits from the personal network and private information. The minority outside investors, on the other hand, will be disadvantaged because they may be kept uninformed and may have to rely solely on the public disclosures.

Companies in Thailand, like companies in most East Asian countries, are characterised by concentrated ownership by families and/or family groups. The existence of more heavily concentrated ownership in Thailand may lead to different reporting practices. For example, companies with a high ownership concentration may be unwilling to provide voluntary disclosure as the majority of shareholders may have alternative ways of obtaining information. Consequently, the level of voluntary disclosure in Thailand may not be as high as in the developed countries such as the US. This lower level of voluntary disclosure may lead to a different association between the level of voluntary disclosure and the stock market liquidity than that found in the US and the other major developed countries.

The legal environment in Thailand

According to La Porta et al. (1997), there are four types of legal rules: English, French, German and Scandinavian. English legal rules are common law based whereas the French, German and Scandinavian laws are codified civil laws. European countries exported their legal systems. English style common law is assumed to be associated with better developed capital markets. La Porta et al. (1997) point out that common law countries seem to provide the best protection for both shareholders and creditors against expropriation by insiders. In contrast, French law countries provide the least protection, and German law countries and Scandinavian law countries are somewhere in the middle. In addition, French law countries have the lowest quality of law enforcement. In an earlier study, La Porta et al. (1996), show that countries with poor investor protections have more highly concentrated ownership of shares.

As Thailand is viewed by La Porta et al. (1997) as adopting an English style legal system it may be expected, that Thailand has a well developed capital market. However, Ball, Robin and Wu (2003) show, in relation to new issues, that the East Asian countries, and specifically Thailand, have accounting standards that are generally viewed as high quality, but have institutional features that give preparers incentives to issue low quality financial reports. This argument consistent with La Porta, Lopez-de-Silanes and Shleifer (2006) who suggest that although Thailand has high disclosure requirements, the laws that would enforce these requirements are weak. Deesomsak, Paudyal and Pescetto (2004) indicate that even though Thai law originated from English style, it had been influenced by the French style which is as associated with the lowest quality of law enforcement among four types of legal rules. Following Deesomsak, Paudyal and Pescetto the rule of law in Thailand is seen as relatively weak. The level of expropriation of minority stakeholders in Thailand may therefore be high and this could imply additional agency problems between inside and outside investors.

Leuz, Nanda and Wysocki (2003) take a different approach to grouping legal and institutional characteristics. They group countries into: (1) outsider economies with large stock markets, dispersed share ownership, strong investor rights and strong legal enforcement; (2) insider economies with less developed stock markets, concentrated ownership, weak investor rights but strong enforcement; and (3) insider economies with weak enforcement. They include Thailand is in this third group.

Insider trading laws

As discussed above, many Thai companies are majority owned by families and/or family groups. These majority owners are effectively insiders, with minority shareholders as outsiders. The information gap created between these family insiders and outside investors may reduce market liquidity. Insider trading rules may partially alleviate this problem.

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In Thailand, insider trading is a statutory offense under the Securities and Exchange Act of 1992 (B.E. 2535)[4]. Section 241 (p.53-54) defines insider trading as:

No person, whether directly or indirectly, shall purchase or sell, offer to purchase or sell or invite any other person to purchase, sell or offer to purchase or sell securities which are listed in the Securities Exchange or traded in an over-the-counter center in such a way as to take advantage of other persons by using information material to changes in the prices of securities which has not yet been disclosed to the public and to which information he has access by virtue of his office or position, and whether or not such act is done for his own or another person's benefit, or to disclose such information so that he will receive consideration from the person who engages in the aforesaid acts.

For the purposes of this Section, the person under the first paragraph shall include:

    (1) director, manager, person responsible for the operation or auditor of a company whose securities are listed in the Securities Exchange or traded in an over-the-counter center;
    (2) securities holder of a company whose securities are listed in the Securities Exchange or traded in an over-the-counter center, who holds securities the par value of which exceeds five percent of the registered capital. For the purpose of calculating the value of such securities held by such person, the securities held by his spouse and minor children shall be counted as his securities;
    (3) state agency personnel, or director, manager, or officer of the Securities Exchange or of an over-the-counter center who is in an office or position with access to information which is material to changes in the price of securities;
    (4) any person involved in securities and/or the trading of securities in the Securities Exchange or in an over-the-counter center.

Section 242 (p.54) stipulates that the SEC can investigate any person gaining benefit from insider information:

The SEC Office shall have the right to call on such person to deliver the benefit which he has gained from such trading of securities or from the disclosure of information within a six month period from the date on which he gained access to such information.

Section 296 (p.65) contains penalty provisions, stating that the person violating insider-trading rules:

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[4] See the Securities and Exchange Commission (2007). *Securities and Exchange Act B.E. 2535 (Translation).*

> *Shall be liable to imprisonment for a term not exceeding two years or a fine not exceeding two times the benefit received or which should have been received by such a person as a result of such contravention but such fine shall not be less than five hundred thousand baht, or both.*

There is, of course, the question of the extent to which the insider trading rules have been enforced. As noted earlier, Thailand is characterised as having strong rules but weak enforcement. However, there have been a number of recent insider trading investigations[5] in Thailand.

The characteristics of the institutional setting and the legal environment in Thailand, which are different to that in the US and other major developed countries, may effect on the quality of financial reporting and the level of information disclosure. Therefore, even though listed companies in Thailand are required by the SET to follow high quality accounting standards in the preparation of their financial reports, these institutional factors may limit the effectiveness of the standards in producing high quality financial reports and more information disclosure.

3.2 The Thai capital market

An organized stock exchange was established in Thailand as limited partnership in 1962. The following year it became a limited company and changed its name to the "Bangkok Stock Exchange Co., Ltd." (BSE). However, the BSE failed to succeed because of a lack of official government support and limited investor understanding of equity markets. The BSE finally ceased operations in the early 1970s. A few years later, in 1975, the "Securities Exchange of Thailand" was established under the Securities Exchange of Thailand Act (B.E. 2517). In 1991, its name was changed to the "Stock Exchange of Thailand" (SET). The Stock Exchange of Thailand became a regulated entity under the Securities and Exchange Act of 1992 (B.E. 2535) (the SEA).

The SEA designates the Securities and Exchange Commission (SEC) as the regulator of the Thai Capital Market. The SEC is responsible for the activities of the Kingdom's

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[5] Cases judged as a violation of insider trading rules in Thailand are provided in Appendix H

capital market, while the Bank of Thailand (BOT) has a duty to oversee the country's money market. In addition, the SEA requires a clear separation between the primary and the secondary markets to facilitate their successful development. Both the primary and secondary markets are regulated by SEC.

The Stock Exchange of Thailand's trading system

There are a variety of trading systems that allow agents to trade financial assets, such as stocks. In general, stock markets can be classified along two main lines: a quote driven market and an order driven market. In a quote driven market, buyers and sellers submit their bid and ask offers to designated market-markers, also known as dealers or specialists. Based on information in their order books, the market-makers will post bid-ask prices at which they will buy or sell, and take the opposite side of each trade. Therefore, the quote driven market will display only the bid and ask offers of designated market-makers. In order driven markets, on the other hand, traders interact directly with each other market participants without the intermediation of market makers. In order driven markets, buyers and sellers will submit the quantity and prices of the stock at which they are willing to buy or sell. These buy and sell orders are displayed and accumulated in a limit-order book, and order execution is usually prioritised on the basis of price and time.

The Stock Exchange of Thailand is predominantly based on an order driven system. This trading system is called the Automated for the Stock Exchange of Thailand (ASSET). The ASSET system consists of two trading possibilities: the main system is 'Automatic Order Matching' (AOM), and the support system is 'Put-Through' (PT). For the main AOM system, the process begins when the buyer or seller submits their order via a broker. These orders will be then electronically submitted from the broker to the SET's computerised order matching system. All orders will be grouped according to price, with the best price taking precedence. Within each price group, orders are then arranged according to time. Alternatively, orders can be submitted by the PT system. Under the PT system, brokers can advertise their buying and selling interests on a screen which provided by the ASSET. This system allows brokers to

deal privately and directly with each other for their own trades or on behalf of their clients.

Disclosure requirements[6] of the Stock Exchange of Thailand

The information that listed companies are required to provide to the SET can be classified into periodic, and non-periodic reports.

Periodic reports: There are four types of periodic reports that listed companies are required to prepare and submit within a specific period under the Securities and Exchange Act (1992), Section 56. These reports are yearly financial statements, quarterly financial statements, annual reports, and disclosure reports of additional information. Each of the periodic report is discussed in detail below, along with the specific period for submitting each type of report. The requirements are summarised in Table 3-1.

Yearly financial statements

A listed company is required to prepare financial statements in line with the procedures specified in the Securities and Exchange Commission (SEC) and file the original reports, along with one copy, with the SEC (voluntary for English version) and send a copy of each Thai and English version to the SET within three months from the end of accounting period. Such financial statements must also be disseminated electronically via the SET disclosure system.

Quarterly financial statements

A listed company is required to prepare quarterly financial statements in line with the procedures specified in the SEC and file the original reports, along with one copy, with the SEC (voluntary for English version) and send a copy of each Thai and English version to the SET within 45 days from the end of accounting period. These financial statements must also be disseminated electronically via the SET disclosure system.

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[6] See the Stock Exchange of Thailand (2007). *Disclosure Manual.*

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Table 3-1: Specific period for submitting periodic reports to the SET

		Filing period after the accounting period ends[7]
1.1	Audited annual financial statement (Submission of Q4)	3 months
	Audited annual financial statement (No submission of Q4)	60 days
1.2	Reviewed quarterly financial statements	45 days
1.3	Annual report	11 0 days
1.4	Disclosure report on additional information (Form 56-1)	90 days

Annual reports

A listed company must also prepare and submit its annual report to the SEC and send four hard copies of the annual reports including four copies on CD-ROMs to the Exchange. The information in the annual report must be in accordance with the disclosure report form (Form 56-2) as prescribed by the office of the SEC. The annual reports must be filed within 110 days from the end of accounting period together with notice of the annual general meeting.

Disclosure reports on additional information (Form 56-1)

A listed company must also prepare and submit a disclosure report on additional information to the Exchange. The information in this report must be in accordance with the disclosure report form for additional information of the issuing company (Form 56-1) as prescribed by the office of the SEC. A listed company must file the original reports, together with one copy, with the SEC and send four copies to the SET within 90 days from the end of accounting period. Such reports must also be disseminated electronically via SET disclosure system.

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[7] If the end of such period falls onto holiday, the deadline will be postponed to the following business day. Companies with different accounting periods shall consistently follow the same practice.

Non-Periodic Reports: There are three types of non-periodic reports that required from the SET. These reports are classified into those requiring the immediate public disclosure of material information, requiring report within three days, and requiring report within 14 days. Each of these reports is discussed below.

The immediate public disclosure of material information

A listed company must disclose all necessary and relevant information concerning its affairs that may affect the rights of shareholders and their investment decisions or may lead to a significant change in the price of its securities. A written notice must be submitted on the date on which any such incidents occur, at least one hour before each securities trading session or at the end of the day's trading at the Exchange. In cases where a listed company fails to submit the required information within the specified period, the listed company shall submit it at least one hour before the first trading session, or before 9 a.m., on the following trading day.

Report within three days

Disclosure of information within three days is required when any of the following incidents occur:

(1) There is a change in the composition of a listed company's Board of Directors. In such a case, a listed company must submit the resumes of the newly appointed directors to the Exchange.

(2) There is a change in a listed company's memorandum of association or articles of association except for an amendment to the memorandum of association with respect to a matter that requires an immediate report.

(3) A listed company relocates its head office.

(4) A listed company, or its subsidiary, changes its auditor.

(5) A listed company changes its securities' register or changes the location of its securities' registrar.

When a change number (1), (2) or (3) has been registered with the Partnerships and Companies Registrar, a listed company must furnish evidence of such a registration with the Exchange within seven days of the date on which the Partnerships and Companies Registrar effects such a registration.

Report within 14 days

A listed company must provide the SET with the following documents within 14 days:

      (1) A copy of the list major shareholders or the first ten major shareholders as of the date of an ordinary general meeting of shareholders, and as of the date of the closing of the share register.

      (2) The minutes of an ordinary general meeting or extraordinary general meeting of shareholders.

      (3) A report on the distribution of shares in the form prescribed by the Exchange.

Penalty provisions

By virtue of Section 274 of the Securities and Exchange Act, any listed company that fails to comply with Section 56 and Section 57, or delays in the submission of financial statements, annual reports and Form 56-1 shall be liable to a fine not exceeding 100,000 baht, and a further fine not exceeding 3,000 baht for each day the contravention continues.

3.3 Summary

This chapter reviews the characteristics of the legal environment and the institutional setting in Thailand and provides an overview of the Stock Exchange of Thailand, in particular of its trading and reporting arrangements.

Chapter 4

The qualitative study: Methodology

This chapter presents the methodology for the first part of the research, a qualitative study. The methodology for the second part of the research will be described on Chapter 7. This chapter, which presents with research questions, the research methodology, and the strategies employed to collect and analyse the data, is organized as follows. The first section describes the research questions. The second section presents an alternative research methodology. The third section presents an overview of grounded theory methodology, as well as the process in building a grounded theory. The fourth section describes the site selection and sample procedure. The following section presents the arguments for the choice of the research method and techniques employed in collecting data. This is followed by a section dealing with the data analysis procedure. The final section provides a summary of this chapter.

4.1 Research questions

The first part of the study aims to gain an understanding of corporate disclosure and the use of information by financial intermediaries in Thailand. The research objective is to explore the phenomena of corporate disclosure and the use of information from the perspective of Thai analysts and fund managers. The initial tentative research questions are about:

a) Sources of information
b) Disclosure and the quality of disclosure
c) Voluntary disclosure
d) Types of information
e) Auditors

These open and tentative research questions are described in detail in the section on data collection.

4.2 Research methodology

There are two broad streams of research design in the social sciences: quantitative research and qualitative research. Denzin and Lincoln (2008) explain the difference between qualitative and quantitative research as:

> "The word *qualitative* implies an emphasis on the qualities of the entities and on processes and meaning that are not experimentally examined or measured (if measured at all) in terms of quantity, amount, intensity, or frequency. Qualitative researchers stress the socially constructed nature of reality, the intimate relationship between the researcher and what is studied, and the situational constraints that shape inquiry. Such researchers emphasize the value-laden nature of inquiry. They seek answers to questions that stress *how* social experience is created and given meaning. In contrast, *quantitative* studies emphasize the measurement and analysis of causal relationships between variables, not process. Proponents of such studies claim that their work is done from within a value-free framework." (Denzin &Lincoln, 2008, p.14)

The decision of which research stream to use depends on what the researcher wants to study and the substance of the research problem (Strauss & Corbin, 1998). For

example, if the research is concerned with investigating things related to observation and measurement in some way, then the quantitative research method would provide the appropriate methodology. Quantitative research is more involved with questions about: how much? how many? how often? to what extent? (Hancock, 1998; Sullivan, 2001).

On the other hand, qualitative research is more focused on how to find the answers to questions that begin with: why? how? in what way? (Hancock, 1998). Strauss & Corbin provided the following definition of qualitative research as:

> "….. any type of research that produces findings not arrived at statistical procedures or other means of quantification. It can refer to research about persons' lives, lived experiences, behaviors, emotions, and feeling as well as about organizational functioning, social movements, culture phenomena, and interactions between nations. Some of the data may be quantified as with census or background information about the persons or objects studied, but the bulk of the analysis is interpretative." (Strauss & Corbin, 1998, p.10-1).

Other qualitative researchers reveal that if the research is concerned with the opinions and attitudes, experiences and feeling of individuals producing subjective data, or with understanding an area that little is known about, or developing an explanation of social phenomena, then the qualitative methodology would be proper (Creswell, 1998; Sullivan, 2001).

The purpose of the first part of the study is to explore the phenomena of corporate disclosure and the use of information from perspective of Thai analysts and fund managers. A qualitative research method is therefore used in the first part of this study in order to get richness of data and deeper insight into the phenomena. The grounded theory methodology is also used as strategy when analysing the data. The following section provides an overview of grounded theory methodology.

4.3 Grounded theory

Grounded theory has been described as a '…. theory that was derived from data, systematically gathered and analyzed through the research process' (Strauss & Corbin, 1998, p.12). The key to grounded theory is to generate in-depth data that can illuminate patterns, concepts, categories, properties, and dimensions of the given phenomena (Glaser & Strauss, 1967; Strauss & Corbin, 1998). The primary focus of grounded theory is the development of theory the analysis of data gained from theoretical sampling.

This section examines the definition of terms used in grounded theory. These can be divided into two types. First, definitions of terms that relate to analysis - open coding, axial coding, and selective coding. Second, definitions of terms that relate to sampling - theoretical sampling, and theoretical saturation. This section also provides an explanation of the research process in building a grounded theory.

Open coding

The initial stage of grounded theory analysis is open coding. Open coding is the process of identifying, categorising, labelling, and describing all important phenomena observed in the data that results in open categories (Strauss & Cobin, 1998). Open categories are concepts generated from data that describe phenomena in the subject of study that emerge as important to the participants (Glaser & Strauss, 1967).

Axial coding

The second stage in grounded theory analysis is axial coding. The purpose of axial coding is to reassemble data fractured during open coding to form more precise and complete explanations of the observed phenomena and relationships among the categories (Strauss & Corbin, 1998). At this stage, the open categories generated during open coding are subsumed into main categories.

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Selective coding

The final analytical process is selective coding, which builds on open and axial coding. This final stage of data analysis involves identification of the core or central category, relating it systematically with the other categories, validating those relationships, and description of the emergent substantive grounded theory (Strauss & Corbin, 1990). The core category is the central phenomenon that connects all the other main categories and represents the essence of the study.

Theoretical sampling

Theoretical sampling is concept driven. It allows the researcher to discover the concepts that are relevant to the problem and population, and enables the researcher to explore and understand the concepts in depth. Strauss and Corbin (1998) indicate that theoretical sampling is especially important when studying or exploring new areas because it enables the researcher to discover new information. Moreover, it allows the researcher to choose samples that can bring about the greatest theoretical return. Strauss and Corbin define theoretical sampling as

> 'Data gathering driven by concepts derived from the evolving theory and based on the concept of "making comparisons," whose purpose is to go places, people, or events that will maximize opportunities to discover variations among concepts and to densify categories in terms of their properties and dimensions.' (Strauss & Corbin, 1998, p.201).

In contrast with statistical sampling, theoretical sampling cannot be planned. It is not possible to make a judgment regarding sample size before embarking on the data collection and analysis (Glaser & Strauss, 1967; Strauss & Corbin, 1998). Corbin and Strauss (2008) point out that theoretical sampling is different from conventional methods of sampling because the researcher does not go out to the site and collect the entire set of data before beginning the analysis. An analysis stage begins after the first sample of data is collected. Data collection never gets too far ahead of the analysis, because the data or the answer that acquired from the interview can lead to additional questions for the next interview.

Data collection leads to analysis, the analysis leads to concept, and the concepts generate more questions. Additional questions lead to more data collection so that the researcher might learn more about those concepts. This process continues until the study reaches the point of saturation, the point that all the concepts are well defined and explained. Thus, the end result of the sample size for grounded theory relies on the point of theoretical saturation, the researcher continuous expanding the sample size until data collection reveals no new data. (Glaser & Strauss, 1967; Strauss & Corbin, 1998; Locke, 2001; Goulding, 2006).

The sample size can be affected by the quality of the data gathering. This is why theoretical sampling is recommended when using grounded theory. The theoretical sampling procedure dictates that the researcher chooses interviewees who have experienced or are experiencing the phenomena under study. By doing so the researcher chooses the people who are 'experts' in the phenomena and thus able to provide the best data available (Glaser & Strauss, 1967; Strauss & Corbin, 1998). By using theoretical sampling and targeting the most knowledgeable persons, it is possible to increase the quality of the data collected in each interview. 'There is an inverse relationship between the amount of usable data obtained from each participant and the number of participants' (Morse, 2000, p.4). Therefore, theoretical sampling provides a sample selection that is more likely to highlight the patterns, concepts, categories, properties, and dimensions of the given phenomena (Glaser & Strauss, 1967; Strauss & Corbin, 1998).

Theoretical saturation

Corbin and Strauss (2008) propose that: 'Saturation is usually explained in term of "when no new data are emerging." But saturation is more than a matter of no new data. It also denotes the development of categories in terms of their properties and dimensions, including variation, and if theory building, the delineating of relationships between concepts.' (p.143)

Strauss and Corbin (1998) indicate that theoretical saturation occurs when:

> '(a) no new or relevant data seem to emerge regarding a category,
>
> (b) the category is well developed in term of its properties and dimensions demonstrating variation, and
>
> (c) the relationships among categories are well established and validated.'
>
> (p.212)

The research process in building a grounded theory

The research strategy employed to address the research question and to achieve the objective of the qualitative part of this study is summarised in the framework as shown in figure 4-1. This relates to grounded theory procedures (Strauss & Corbin, 1990, 1998; Corbin & Strauss, 2008). As indicated previously, the process of building a grounded theory begins with a general broad range of research questions that the researcher is interested in. Then the target sample is selected using theoretical sampling. Data collection begins after finding an appropriate sample, i.e. those most knowledgeable and with the best understanding in the area of study. For this stage, data collection and data analysis will go hand in hand. The information that is acquired from the data collection provides the additional questions to be asked in the next interview. This process and the sampling continues until the study reaches theoretical saturation.
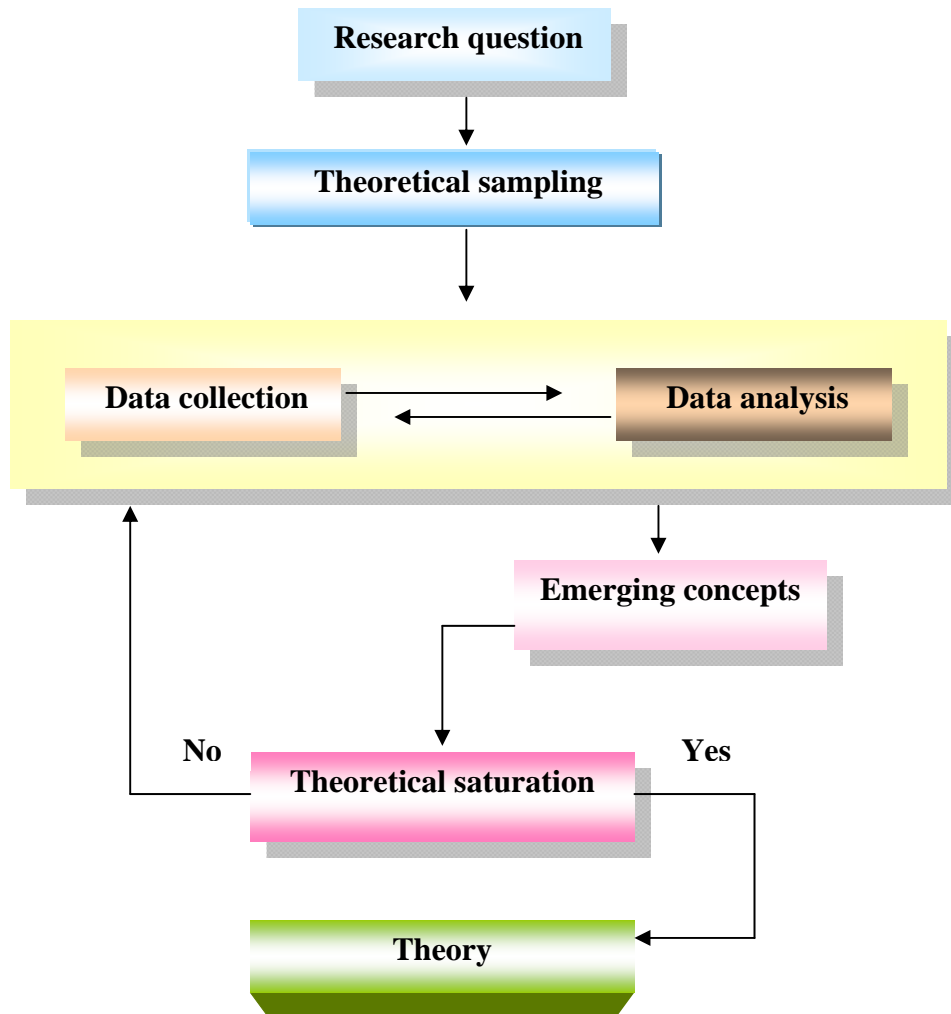
Figure 4-1: Research process to build a grounded theory

The following section considers the sampling aspect of the study. This includes the sampling design, target population and sampling method.

4.4 The site selection and sample procedure

The sampling design defines the target population and the sampling method used this study. Sullivan (2001) provides the following definition of population and sample:

'A sample is drawn from a population, which refers to all possible cases of what we are interested in studying. A sample consists of one or more

elements or cases selected from some larger grouping or population. The manner in which the elements are selected for the sample has enormous implications for the scientific utility of the research based on that sample. To select a good sample, you need to define clearly the population from which the sample is to be drawn. Failure to define the population clearly can make generalizing from the sample observations highly ambiguous and result in drawing inaccurate conclusions.' (Sullivan, 2001, p.187)

The theoretical sampling procedure is used in this study. This method is one type of the non-probability sampling which is based on selection by non-random means. It is a useful method of obtaining information from the interviewees who have experienced, or experts in, the phenomena (Glaser & Strauss, 1967; Strauss & Corbin, 1998). This study uses securities analysts and fund managers as a sampling frame as they are both expert users of financial information and their views are likely to impact on market behaviour.

Target population

The target population comprises the securities analysts and the fund managers whose names were disclosed on the website of the Securities and Exchange Commission (SEC) of Thailand as the licensed and approved persons on the 31st May 2007. The SEC website on that date provided 201 names of licensed and approved securities analysts from 42 licensed securities companies, and 154 names of licensed and approved fund manager from 29 licensed fund management companies.

Table 4-1: Detail of the target population

	Securities Analysts	**Fund Managers**
Licensed securities/fund management companies	42	29
Licensed persons	201	154

The sampling method

The sampling method used for securities analysts and fund managers is considered separately. The criterion for sample selection used in this study is as followed. For the securities analysts, the sample was chosen from the largest licensed securities companies by size, and one security analyst was selected from each licensed securities company. Although, sample size is not defined in advance for the theoretical sampling procedure, due to the time constraint, five securities analysts from each of the top five securities companies were contacted and appointments arranged in advance by email and telephone before the researcher went to collect the data in Thailand. Two analysts out of five agreed to participate in the interviews. After conducting the two interviews, contact was made with other securities analysts. The other securities companies were selected from the group below the top five largest securities companies. Interviews were conducted until theoretical saturation was reached. The sample consists of four securities analysts from the eight securities companies approached.

For the fund managers, the sample was selected using the same criteria as for securities analysts. The sample was chosen from the top largest licensed fund management companies in Thailand by market capitalization, and non-random sampling of one fund manager from each of these companies. Four fund managers from the top four largest licensed fund management companies were contacted, and three of them agreed to participate in the study. One of the three interviews was conducted via telephone, because on the day of the interview there was a problem caused by the traffic jams and the interviewee could not come to her office at the time of the appointment. The interviewee asked for the telephone interview for her convenience. After the interview with the third interviewee, other fund managers were identified and contacted, until there no new information was obtained from the interviewees. Five out of the six companies approached agreed to participate in the study.

4.5 Data collection

This section describes on the data collection aspect of the study. This consists of the research method, interviews schedule, mechanics of gathering interview material, and the interview procedure. Each topic is discussed in turn as follows.

Research method

As the first part of the research aims to explore the preferences of Thai financial intermediaries about the sources and channels of information disclosure and their views about the quality of disclosure, the interview was chosen as a research method for gathering the data. There are several reasons for using the interview as the research method. The first is because 'the interviewing is a more flexible form of data collection than questionnaires. This flexibility makes interviewing suitable for a far broader range of research situations' (Sullivan, 2001, p. 271). The second is that this method gives both the interviewer and the interviewee an opportunity to understand the questions and answers clearly. For the interviewer, the interview offers an opportunity to explain the questions that the interviewees may not clearly understand. For the interviewee, the interview can encourage him or her to give more accurate and complete information that allows the interviewer to receive in-depth information and to clarify answers. Another reason for using the interview is that the interviewer can perceive the interviewee's response during the interview. For example, the interviewee's attitude toward the interview and the emotional reaction of the interviewees to questions. This additional information enables the interviewer to better evaluate responses given by the interviewee, especially when the subject matter is highly personal or arguable. (Gorden, 1987 quoted in Sullivan, 2001, p. 272).

Hancock (1998) indicates that there are basically three types of interviews method: structured, semi-structured, and unstructured. The first type of interview method is the structured interview. This type of interview consists of a tightly structured set of open ended questions carefully worded and arranged in advance. The interviewer asks the same questions to each interviewee. Structured interviews allow the interviewer to collect detailed data systematically and this allows comparability among all

interviewees. The semi-structured interview is the second type of interview method. This involves the preparation of an interview schedule that lists a predetermined set of questions or issues that are to be explored during an interview. This interview schedule serves as an outline during the interview process in order to ensure that basically the same information is obtained from all interviewees. The advantage of the interview schedule approach is that it makes interviewing more systematic and comprehensive by delimiting the issues to be covered in the interview. The final type of the interview method is the unstructured interview. It is also called "the informal conversational interview" (Patton 2002, p.342). This is the most open-ended method of interviewing which is based on questions that are not planned. The interviewer goes into the site with the purpose of discussing a limited number of topics. This type of interview is appropriate when the interviewer wants to maintain maximum flexibility. Under these circumstances, it is not possible to have a predetermined set of questions. Data collected from unstructured interview will be different for each person interviewed. The advantage of unstructured interview is that the interviewer is flexible and highly responsive to individual differences, situational changes and emerging new information.

In this study, the research method used for data collection is the semi-structured interview. This type of interview is flexible and provides opportunities for both interviewer and interviewee to discuss some topics or subject areas in greater depth. This method has the major advantage of allowing the interviewees to express their opinions on wide-ranging, predetermined issues, and also in response to supplementary questions seeking clarity, consistency and full explanation (Barker, 1998). The interviewer can predetermine the topics or subject areas to cover, but is open and amenable to unexpected additional information from the interviewee. Hancock (1998) suggests that '….(t)his can be particularly important if a limited time is available for each interview and the interviewer wants to be sure that the "key issues" will be covered' (p.10). This type of interview involves the preparation of an interview schedule.

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Interview schedule

An interview schedule is a set of outline questions or issues that are to be explored in the course of an interview. The schedule is of benefit to researchers who employ the interview as a data collection method. Sullivan (2001) points out that: '…. (e)ven though interviewers will be familiar with the content of the interview, they still need good directions and devices such as contingency questions to ensure that they collect all information and do so quickly' (p.263).

The schedule comprises groups of questions related to the topics, subject areas and the research questions of interest, and is designed to allow the interviewees to interpret and answer in their own way (Bryman, 1988; Buchanan, 1993; Holland, 2005). Nevertheless, the interview schedule is prepared to ensure that the same basic information is obtained from each person interviewed. However, '….(t)he interviewer remains free to build a conversation within a particular subject area, to word questions spontaneously, and to establish a conversational style but with the focus on a particular subject that has been predetermined' (Patton, 2002, p.343). Therefore, the researcher starts the interview with a few specific questions and develops other questions, which might emerge during the interview.

Patton (2002) suggests that the advantage of the interview schedule is to ensure that the interviewer has carefully decided how best to use the limited time available in an interview situation. Moreover, it helps to ensure that the interview is more systematic and comprehensive by predetermining the set of questions and issues to be explored in the interview.

In this study, the interview schedule comprised of five groups of questions (see Appendix A). The first group of questions are about sources of information. The questions aim is to identify the sources of information that analysts and fund managers use. There are sub-questions which deal with the sources of information which the analysts/fund managers use when they analyse companies, and the channels through which the information about the companies are received (public disclosure and private disclosure).

The second group of questions are about disclosure and the quality of disclosure. Sub-questions in this group deal with 'what do the analysts/fund managers understand about disclosure', 'what is the objective of disclosure', 'what do the analysts/fund managers understand as being the characteristics of good disclosure', and 'does disclosure have an effect on pricing'. The purpose of this group of questions is to understand what disclosure means to the analysts and fund managers, and their perceptions about the characteristic of good disclosure.

The third group of questions are about voluntary disclosure. The sub-questions are focused on voluntary disclosure and whether it enhances the value of the annual report or not. It aims to investigate the attitude of the analysts and fund managers to voluntary disclosure, and the value it adds to the annual report.

The fourth group of questions are about the type of information, and the sections of the annual report, which analysts and fund managers use when analysing companies. This group of question tries to elicit an understanding of what type of the information, and which sections of the annual report, are useful to analysts and fund managers.

The final group of questions are about the auditor and aim to investigate the importance of the auditor in enhancing the credibility of financial statements. The sub-questions are mainly about the importance of the auditor, whether or not the auditor enhances the credibility of financial statements, and the association between audit firm/auditor's reputation and the value of the annual report.

Mechanics of gathering interview data

The interviews were recorded using an audio recorder. The audio recorder is one of the most useful methods of gathering interview data. As Patton stated:

> "No matter what style of interviewing you use and no matter how carefully you word questions, it all comes to naught if you fail to capture the actual words of person being interviewed. The raw data of interviews are the actual quotations spoken by interviewees. Nothing can substitute for these data: the actual things said by real people. That's the prize sought by the qualitative inquirer. (Patton, 2002, p.380)"

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The objective of each interview is to record as fully and fairly as possible the interviewee's responses. Therefore, the method of recording the verbatim responses from the interviewee is essential. Not only does the audio recorder increase the accuracy of data collection, but it also allows the interviewer to be more focused on the interviewee.

In addition, notes were taken during the interview. Patton (2002) asserts that the use of audio recorder does not eliminate the benefit of taking notes, but does help the researcher to concentrate on taking strategic and focused notes, rather than attempting verbatim notes. There are several benefits of taking notes. The first is that it allows the interviewer to develop new questions as the interview proceeds. It also allows the interviewer to recheck something that the interviewee said earlier. The second benefit is to provide backup material for the interviewer in event that there are problems with the audio file. Moreover, taking notes about what the interviewee said will indicate the location of the important quotations from the interview and facilitate later analysis.

Interview procedure

For both groups, the securities analysts and fund managers, the interview procedure for data collection was identical. An email letter was sent in advance to each individual interviewee informing him/her of the purpose of the study and the outlining the questions used in the interview. A follow up email and telephone call was made to arrange the interview.

A total of nine face-to-face interviews were conducted during July and September 2007. All interviews were conducted in Thai[8] at the interviewee's workplace and at a mutually convenient time. Before the start of each interview, the purpose of the study was fully explained again, and the interviewee was assured that they would be free to skip questions or leave the interview at any time.

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[8] In this study all interviews took place in Thailand with Thai people, thus all the interviews were conducted in Thai. These encourage the interviewees feel comfortable to answer and express their opinions openly.

The interviewee's permission to use an audio recorder was sought before the interview commenced. Shorthand notes were also kept. After each interview, the audio recorder was checked immediately to make sure that it was functioning properly. Most of the questions were open-ended and interviewees were encouraged to raise other matters they considered relevant or of interest. Most of the interviews lasted for approximate time for forty-five minutes. There were two exceptions: one interview took over an hour and the other lasted for around twenty-five minutes.

4.6 Data analysis

The researcher listened to the entire recording of the interview several times before it was transcribed verbatim[9] in Thai written. This was combined with the shorthand notes taken during the interview. Halcomb and Davidson (2006) asserted that a verbatim record of the interview is beneficial in facilitating data analysis by bringing researchers closer to their data. To ensure that the interview transcripts accurately reflected the content of the interview, the researcher listened to the audio recordings again and compared it with the interview transcripts. Amendments were made until the transcripts accurately reflected the interview. Moreover, cross-checking the entire interview transcripts with the original audio files were undertaken by another person who was not previously involved in the data collection. The interview transcripts were then typed in the form of a word processing application before being analysed.

The researcher read through each interview transcript several times before the data were analyzed thematically in Thai[10]using the NVivo7 software package. This package allows the researcher to organize the themes in a concise way. The analysis was done in Thai in order to retain the integrity of the information. A grounded theory approach (Glaser & Strauss, 1967) was used in the analysis. The analysis involved the three analytical processes comprising open, axial and selective coding. Open coding produced a set of concepts that were further integrated into a set of sub-categories. Axial coding focused more on the relationships between each sub-category in order to

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[9] Verbatim transcription refers to the word-for-word reproduction of verbal data, where the written words are an exact replication of the audio recorded words (Poland, 1995)
[10] the original language

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produce a set of main categories. Appendix B contains a summary of the coding, together with a brief description of categories. The final stage was the process of selective coding. This stage requires the selection of the core category, that is, the main theme which was systematically related to the main categories that emerged from the axial coding stage.

When the analysis was complete, the results were translated from Thai into English following the guidelines proposed by Guillemin, Bombardier and Beaton (1993). These guidelines are based on methods for cross-cultural adaptation in the fields of psychology and sociology. Guillemin, Bombardier and Beaton assert that the translations should be undertaken by at least two independent translators. This would help in the detection of errors and differing in the interpretations of ambiguous phrases in the original. Thus, for accuracy and validity, two translators were asked to recheck the translated results of the analysis. The first translator was a senior lecturer in Department of Accounting from the University in Thailand who had knowledge and experience in this field and was familiar with the concepts involved. The other translator was a lecturer in the Faculty of Humanities from the University in Thailand who was unaware of the concepts involved but aware of the meaning and the accuracy of the sentences. Both of the translators were well educated in English and Thai, and were native speakers of Thai. The results of the analysis in both Thai and English versions were sent to the two translators via an email, and the translators worked independently.

4.7 Summary

This chapter describes the objectives and research methodology for the qualitative part of the current research. A grounded theory approach was adopted for sampling procedure, data collection and data analysis. The purpose for the first part of this research was to gain an understanding of the use of information by financial intermediaries in Thailand. The chapter also dealt with an overview of the strategies adopted to improve the validity and reliability of the research process. The following chapter presents the themes that arise from the interviews and the discussions.

Chapter 5

The qualitative study:
Themes arising from the interviews

This chapter presents the results of final analytical process as well as the emergent substantive grounded theory. This final stage of data analysis in grounded theory is selective coding. Selective coding is the process that builds upon the open and axial coding. This stage of data analysis, therefore, involves identification of the central, or core, category and description of the emergent substantive grounded theory. The core category is the central phenomenon that arises from open categories and connects all the main categories in order to represent the essence of the study. Details of all the open categories, the main categories and the way such categories relate to each other are provided in appendices B and C at the end of thesis.

5.1 Research findings

Five broad themes emerge from the analysis of the interviews with securities analysts and fund managers. These are: (i) the sources of information they use and the channels of communication with the company; (ii) the quality of the disclosures; (iii) voluntary disclosure; (iv) the relative importance of different types of information within the annual report; and (v) the value added by the audit report. The research findings from each theme are discussed below.

Theme I: Sources and channels of information disclosure

The first theme is about the sources and channels of the information. There are two subsections of this theme: private disclosure and public disclosure. The outline of this theme is summarised as in Figure 5-1.
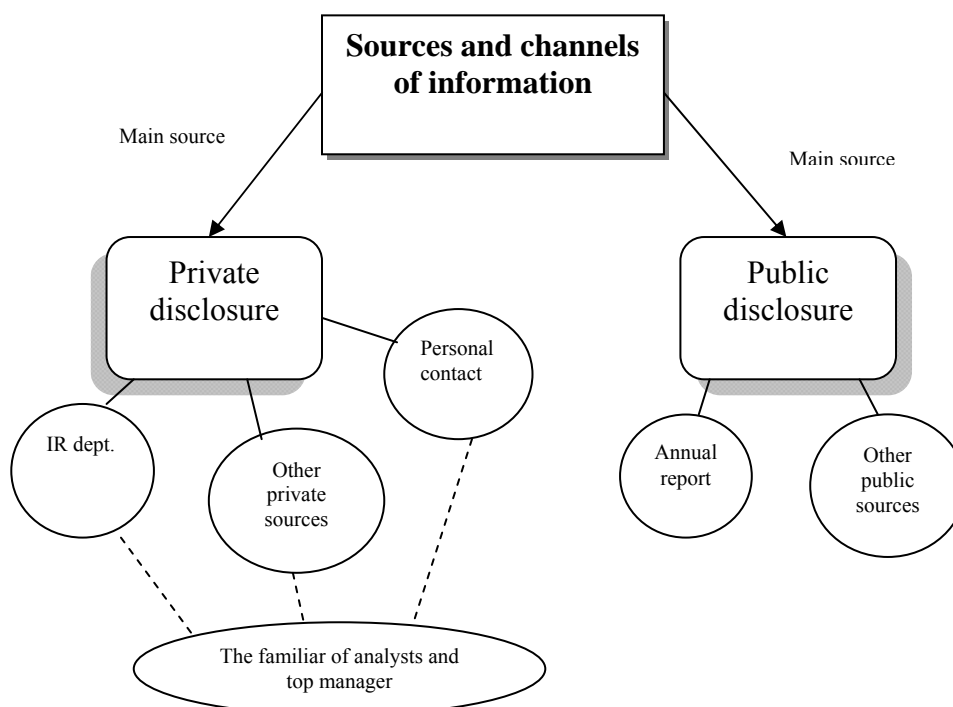
Figure 5-1: Sources and channels of the information

Securities analysts and fund managers tended to distinguish between public and private channels of disclosure by companies. The two main channels of public disclosure are seen to be companies' annual reports and information disclosure report (Form 56-1). Private communication with companies comes through personal contacts, such as face-to-face meetings and telephone conversations with senior executives, company visits and contact with companies' Investor Relation (IR) departments. Securities analysts and fund managers generally use both channels. For example:

> Case A: 'There are two main sources that I use in analyzing a company; corporate financial statements, and interviewing the company's top executives. Both sources of information come from the credible source, because we get it directly from the company not from other people." (Securities analyst)

Public disclosure

The securities analysts and fund managers interviewed indicated that they used various types of information in their analysis of companies. The main sources of direct information from companies are the annual reports, SET Form 56-1s and the companies' websites. Other channels of direct communication from companies are their presentations of the preliminary and interim results, preliminary profit announcements, and the companies' AGMs. Interviewees had different views of the importance of the AGM as a source of information. For example:

> Case I: 'From the shareholders meeting, we usually get more important information because the company's top managers would attend the meeting and have to present the company's view. Sometimes they have to give some additional information. For example, when the company's top management has to gain shareholder approval for a bond issue. If we wonder why they have to issue the bond, for example, has the company enough working capital, the top executive should be able to explain the reason why. If the explanation does not sound reasonable, the shareholders will ask more questions. That means we will get more useful information.'
> (Fund manager)

On the other hand:

> Case F: 'I rarely use the information from this source (AGM) because we did not get adequate information from the Annual General Meeting. In the AGM there are many investors attending, thus we scarcely get in-depth information. Therefore, we attend the AGM in order to protect our rights rather than get some information for analysis.' (Fund manager)

In addition to public disclosures by companies, analysts and fund managers use a variety of other sources of public information. These include trade journals, industry and government statistics, Datastream and other online databases, industry and government statistics, newspapers and other analysts.

Companies' annual reports are often seen as important sources of information for securities analysts and fund managers. However, most interviewees indicated that the annual reports are of limited value because of the delay in their publication. Rather, they look to other sources of information, in particular Form 56-1, which is available online on the SEC's website and the web-base SET Market Analysis and Reporting Tool[11] (SETSMART). For example:

> Case F: 'I seldom use the information from the annual report because of its delay in publication and it is not up-to-date. We have to wait for the annual report to be prepared for almost three months after the closing date, while we can have the financial statements soon after its disclosed …. on the Stock Exchange of Thailand website …... I do not mean that the annual reports has no information, but it takes a long period of time before we get the annual reports. When we get it, we already knew all of the information what they contain in it.'
> (Fund manager)

Securities analysts and fund managers, however, did indicate that they study annual reports before making company visits or interviewing senior managers in order to identify issues. For example:

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[11] The web-based application from the Stock Exchange of Thailand (SET) that can seamlessly integrate comprehensive sources of Thai listed company data such as historical share prices, historical indices, listed company profile and historical news. By using SETSMART, the investors will have an alternative investment tool to access the same channel of information like those professionals.

> Case B: 'Every time I do a company visit, I will study the annual report thoroughly ….. The reason is that the questions we ask during the company visit are not about the numbers, which we can find from the papers. Therefore, we have to prepare ourselves to be ready before we meet the companies' top executives, at least 90 percent, and ask them more about the companies' direction.' (Securities analyst)

The analysis of the annual report is therefore a precursor to direct contact with the senior managers of companies.

Private disclosure

Interviewees used private disclosure to refer to their personal contacts with companies. These would include interviews and telephone conversations with companies' top management, company visits or contacts with the companies' investor relations departments. Most interviewees asserted that private disclosure is their preferred channel of receiving information from the company. This is because it is a two-way process which allows them to develop a clear understanding of companies. For example:

> Case A: '...to get direct information from the company is very useful and is as important as the company information presented in the media. That is why the companies always have road shows. Listed companies organize the road shows in order to arrange the meeting between the investors and the companies' executives. The companies executives take this opportunity to inform the investors all about what they need to know such as, the direction of the company and how the company operates under these circumstances, high competition, fluctuated currency value, increases in oil price, more competitor from abroad and so on.' (Securities analyst)

Personal contact, such as, company visiting and shareholders meeting, is the channel through which the interviewees can receive the information directly from the company. Most interviewees preferred this channel because they could acquire more in-depth information that they could not find in the papers or the annual report. The information is usually provided by the company's top management. Therefore it is a good opportunity for the interviewees to ask questions about strategy or important issues which are not answered by the annual report.

Personal contact with companies is seen to have advantages over other sources of information. Interviewees indicated that it enabled them to develop an understanding of company strategy and the future direction of the company. One analyst said that from personal contact they get the top executives' vision, an overall picture of the company, the company's problems and the way in which the company's management plans to solve these problems. A fund manager indicated:

> Case F: 'We can easily acquire general information about a company, but that information does not indicate anything about its direction in the future. As an investment is based on the future, the personal contact will be more useful than the information from the annual report.' (Fund manager)

Another, advantage of the personal contact is that it is two-way communication. When the interviewees have any doubt, they can ask the company's top management get the answer right away. Further, they can observe top executives reaction to questions.

Although there are several advantages of the personal contact with the company, there can be problems. This is particularly the case for someone who has no experience, since they may not catch important information which affects company risk. For example:

> Case I: '….. if the audiences (analysts) have no experience, they would not catch any important information. … the company's top management would announce only the good news about the company … sometimes we will meet the analysts who try to find out from the company's executive where the numbers come from; meanwhile the company's top management could not answer those questions. It seems like we did not get any information from the company visit.' (Fund manager)

The value of meetings therefore is seen to depend on the abilities of both the analysts and fund managers, and on the company's top management.

Most interviewees indicated that IR departments are important sources of information, especially in specialist industries that have complicated products or services. However, because setting up an IR department is costly, only a few Thai listed companies have an IR department. Interviewees expressed a preference for using IR

departments because they can acquire in-depth information about the company from this channel. Moreover, they indicated that this channel of information would be very useful for the individual investors.

> Case F: 'The information that the investor relation departments provide is quite in-depth, especially in an industry with quite complicated products such as petrochemical or whatever they are specialist. Therefore, the IR department is of great benefit for us …. If we talk about general companies, where their products or services are not too complicated, their IR department might be very useful for individual investors but not for me because I am the institutional investor with lots of data and able to access from many sources of information. In contrast, the companies where their products are complicated, the IR department would be very useful and dependable (for me and every one) since the analysts can hardly understand them.' (Fund manager)

The private disclosure channel is the preferred channel for analysts and fund managers when they need additional information from the company. They have the opportunity to contact companies' top managements in person and ask for the additional information. Analysts and fund managers frequently develop close relationships with top management. This could mean that these analysts and fund managers would receive more information than others. However:

> Case A: 'An individual familiarity would be possible. However, it depends on the top managers of the listed companies, they should know how much they can disclose and they should have professional ethics. From my view point, of course the analysts who have been working in this career for a long period of time have more opportunity to have contact with many top managers than analysts who just start their career. Therefore, top managers should be aware of how much the information should be disclosed.' (Securities analyst)

> Case D: 'Uhmm… it is partly possible. Actually, there are SET laws which have already coped this problem. Although some of the analysts get more information than the others, I do not think that they can use or get benefit from that insider information.' (Securities analyst)

Some interviewees suggested that the problem of differential amounts of information was partly resolved through company visits in which all analysts and fund managers were given the same fact sheets and/or information books and attended the same presentations.

Theme II: Reasons for disclosure and the quality of disclosure

The second theme is about disclosure and the quality of disclosure. In this theme, there are five subsections as represented in Figure 5-2
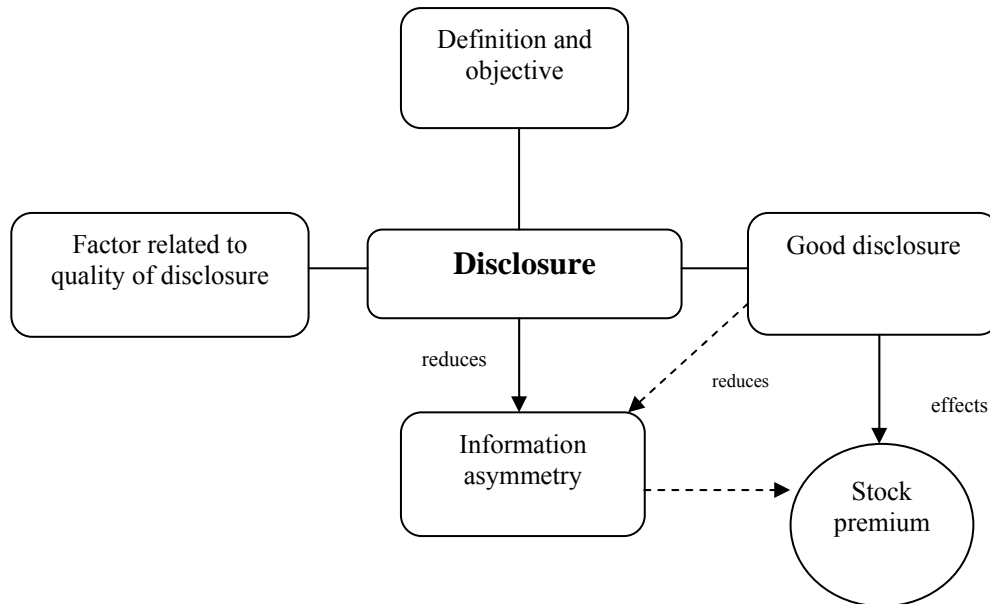
Figure 5-2: Disclosure and the quality of disclosure

Interviewees indicated that companies disclose information publicly for a variety of reasons. Some information must be disclosed in order to meet SET requirements. Other reasons for disclosure include a desire on the part of managements to present a good image of the company with a view to increasing its business value and its market value. There is therefore a belief that company disclosures may create or increase a stock premium. Overall, transparency is seen as important, as reflected in the following:

> Case A: 'For the transparency of the company itself. It is very important, if the investors believe that the company has transparency, is honest and discloses adequate information for the public to be able to analyze it with no doubt. ……. This will restore company credibility and provide an understanding of the company's direction. Since it is not possible for the company to meet investors or analysts at all times, the transparent public disclosure will take part in answering the questions, at least 80%-90%, and enable them to analyze it more easily.' (Securities analyst)

The interviewees indicated that there are several characteristics of good disclosure. First, there is the quality of the information itself. Most interviews stated that good information should be clear, accurate, reliable and truthful. Second, the information should be relevant and adequate. Too much information was seen to present problems. For example:

> Case A: 'Companies should disclose adequate and relevant information to investors. Full disclose may be harmful to the company. For example, if companies disclose their customer name list or their export market share, the companies may lose. Thus, they should disclose the information in an appropriate level.'
> (Securities analyst)

Third, interviewees indicated that companies should disclose information regularly and in a timely way, and that they should report both good and bad news. Finally, interviewees indicated that good disclosure practice is to treat all investors equally, and not offer advantages to certain groups.

As well as expressing views about the quality of the information being disclosed, securities analysts and fund managers expressed views about the quality of the systems for communicating with investors. They suggested that companies should provide convenient and easy channels of access to information for all investors, such as companies' websites containing financial statements and annual reports for current and previous years. For example:

> Case F: 'Uhmm… companies should have obvious channels for their disclosure. It means that if something happens to the company the investors will know which channels they can follow up and check the companies' news besides the channels that the companies practice under the SET mandatory. Examples are the IR department or the companies' website for the investors to follow up the news. The obvious channels of disclosure will be very helpful for the investors especially for those who did not invest in that company or have not followed the companies' news for a long time. Supposing that these investors want to reinvest in that company, they should be able to know the company's disclosure system, the way the company considers disclosing the information. After that, is the disclosure method which the companies used such as their disclosure channels and the details of the information that they disclose.' (Fund manager)

Case I: '…… If it is an ideal company with good disclosure characteristic, I think the company should assign the company's speaker which has similar characteristic to the IR department. From this speaker, we would get the reliable information which comes from the same source of information from the company. That is what we want. ……' (Fund manager)

The quality of company disclosures was seen by interviewees to be related to two factors: the regulator and the company itself. Most interviewees indicated that the more regulators examine listed companies, the higher the disclosure quality. Consequently, the listed companies will have the same standard. However, some companies have no regulatory control, but they also provide good quality of disclosure.

Case A: '…. some companies have no regulatory control like *ABC* Public Company Listed, or *XYZ* Public Company Listed but they do have the higher level disclosure. This results in the public being happy, they feel that the disclosed information is fully detailed and transparent. Meanwhile, some other companies try to hide from the analysts and it is interesting to know that many of them have faced financial crises. Their financial statement announcements concentrate on the amount of numbers rather than explanation. Based on this kind of information, the public users do not understand what has happened to these companies and come up with many questions. If the companies do not disclosure the information, the analysts will not have the accurate information to analyse.' (Securities analyst)

Listed companies vary is the level and quality of the information they choose to disclose. Thai listed companies can be divided into two groups: (i) large listed companies; and (ii) medium and small listed companies. For large listed companies, the market mechanism has more influence. When these companies increase their disclosures, there will be an increase their stock premium. Therefore, the companies in this group usually disclose the information in excess of the requirements of the SET. On the other hand, most of the medium and small listed companies usually disclose their information at the minimum requirement of the SET.

There may be differences in the amount and quality of information disclosed by companies. This may arise from the type of relationship between the analyst or fund manager and the company's management. It may also arise from the capability the managers in disclosing information. For example:

Case F: '… Uhmm…in small listed companies, some top executives do not know nor clearly understand the policy of how properly to disclose information, and this may lead to information asymmetry. For instance, when some small groups of investors make an appointment with the (small) companies' top executives, sometimes these top executives are not careful with the information they disclose. They forget that that information should be disclosed to public at the same time. Sometimes top executives in small listed companies announce the information in these small meeting. Consequently, those small groups of investors who attend that meeting will get the benefit. I think this problem should be corrected. However, the big listed companies have better disclosure systems.' (Fund manager)

A distinction was also drawn between institutional and individual investors. This is reflected in the following example:

Case G: 'May I divide the investors into two groups, institutional investors and individual investors. It is the duty of institutional investors to follow up the information; if they missed some part of the information that means they are deficient in their responsibility. On the other hand it would be difficult for individual investors to access the information. Almost ninety percent of them are unable to obtain the information in time because it is not their job to follow up the information. Even though there is good disclosure in the capital market, the information asymmetry problems still happens. Therefore, the other possible alternative for them to invest is mutual funds instead of stock.' (Fund manager)

Disclosure quality is seen to have an impact on share prices. For example:

Case B: 'Good disclosure increases the stock premium. Good disclosure means that the companies disclose both positive and negative information. The companies should disclose relevant information with accuracy, so increasing their transparency. For instance, in the past AA stock did not reach a higher premium when they traded because the investors wondered about the accuracy of their information and did not trust in the company's disclosures. Compared with the BB stock and the CC stock which traded at higher premiums because of their transparent disclosures.' (Securities analyst)

Case A: 'Transparent disclosure should effect on pricing. Companies with transparent discloses are more likely to have higher share prices than companies without transparent discloses. For example, both companies may have an equal profit, but the P/E of the company which discloses unclear information would not be as high as the P/E of the transparent company. Some studies indicate that the transparent company's stock premium is about 20-25 percent higher than the

share price of the companies without transparency.'(Securities analyst)

Theme III: Voluntary disclosure

The third theme is about voluntary disclosure. In this theme, there are three subsections as illustrated in Figure 5-3.
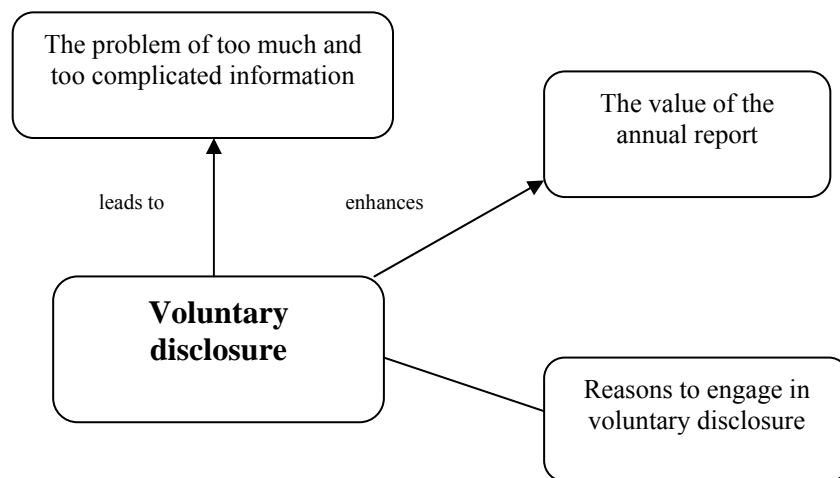
Figure 5-3: Voluntary disclosure

Security analysts and fund managers identified several reasons to explain why a company may disclose information voluntarily. First, management discloses information because they would like to advertise the company to the investors, to provide a better understanding of the company and so persuade investors to invest. In particular, the additional information may assist investors in valuing the company. Second, management may assume that greater disclosure increases the perceived quality of the company. Third, management may provide additional disclosures in order to restore investor confidence. This is seen to be particularly the case following the financial crisis experienced as Thailand. Fourth, companies that engage in voluntary disclosure do so because they want investors to pay attention to their stock and increase the stock premium. Finally, most interviewees indicated that voluntary disclosure enhances the value of the annual report.

Most of the interviewees indicated that additional information is good and of benefit to investors, especially sophisticated investors who are able to understand the information clearly and are able to analyse it. However, if companies disclose too much information, it could confuse unsophisticated investors and so might not be beneficial to them. For example:

> Case B: 'Additional disclosure is good, but if the companies disclose too much information, I do not think it would be benefit; too much information would make investors confused. Not all investors are sophisticated in this field; only some groups of investors could interpret and understand the annual report clearly. Therefore, if the companies give too much information, it would make the investors confused and so be misleading. However, some sophisticated investors who prefer more information maybe dispute this idea, and ask the companies to make voluntary disclosures.' (Securities analyst)

Therefore, the interviewees suggested that the companies should form their IR department to provide more information for the investors.

> Case B: 'Some companies form an IR department to provide more information to the analysts and investors because some complex information may be too complicated for some investors.'
> (Securities analyst)

Theme IV: The annual report

The fourth theme is about the type of information and the usefulness of specific sections in the annual report. In this theme, there are three following subsections as outlined in Figure 5-4.
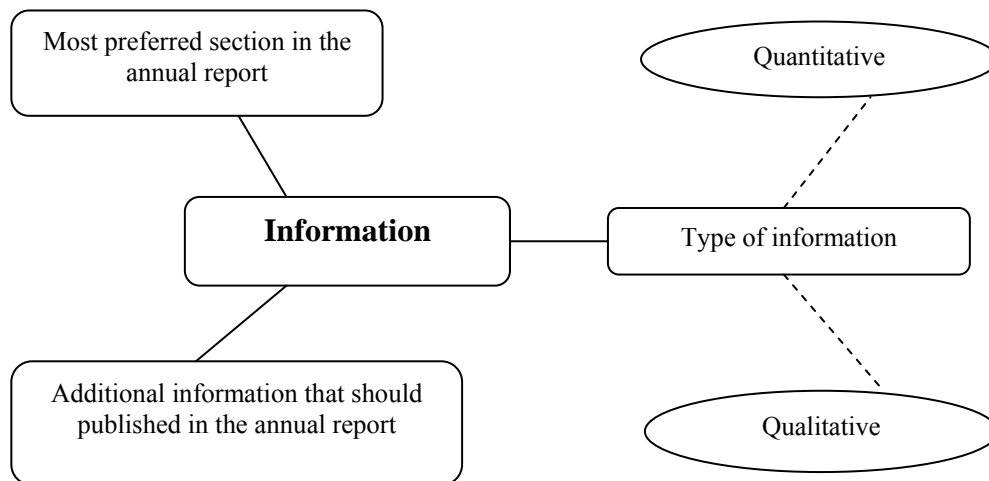
Figure 5-4: Type of information and sections of the annual report

It is common to distinguish between two types of information disclosed by the companies in their annual reports: quantitative and qualitative information. Quantitative information is considered as information in numerical form or involves a measurement of some kind. Qualitative information is usually contained in the narrative sections of the annual report. Different preferences were found amongst the analysts and fund managers interviewed. Some indicated a preference for quantitative information. For example:

> Case F: '…..Actually, I use both types of data and focus more on the quantitative data because we can look for all ratios from that. These ratios present the performance of the company and at the same time we use it as a double check tool for us; whether the top executives can deliver on their commitments in the past through the financial statement or not. Therefore, the quantitative data is very useful for us to forecast the company's share price in the future.' (Fund manager)

While other interviewees indicated that they preferred qualitative information to quantitative information. For example:

> Case B: '…..I think qualitative is more important than quantitative. Actually, most analysts prefer knowledge based information than indicative information. For example, if some companies announce their strength and good news, in fact I do not think they should do like that, instead of doing thing like that, it would be better if they could inform us with their important quantitative and qualitative information for analysis and allow us to raise any questions. The companies should provide the fundamental information, for example, give some information about what happens with this year sales and briefly explain or forecast the future, but do not express their own idea, otherwise it will be too much judgement.' (Securities analyst)

However, other interviewees stated that qualitative information, for example, companies' competitive situations, problems, and competitors, is also important when they making decisions. For example:

> Case F: '…..The qualitative data is also important too. As we already know that the quantitative data is the historical data, but to forecast the future we need the qualitative data to plug in. For example, if we want to forecast how much the sales will increase, what the margin will be, how much the bottom line is, how much dividend should be paid, etc. All of these need qualitative data such as industry trend, top executive forecast, product price or their competence to plug in with all those numerical data in order to make a forecast.' (Fund manager)

Although, there are two views on type of information, most of the interviewees stated that they pay attention in both types of information equally. The quantitative information will be used in analysing the trend in order to forecast the future, while the qualitative information will add up some other important factors that are not in numbers, such as competition condition etc. Therefore, without both types of information, the analyses will not be complete.

Most interviewees indicated that the most useful parts in the annual report are those sections containing qualitative information, rather than quantitative information. For example:

> Case F: 'Uhmm… It does not mean that we did not pay any attention to the annual report but because we can obtain most information before we have the annual report. Therefore, I just look at… Uhmm…

the section on corporate governance, the audit committee report, the nominating committee report, and the risk management committee report. I pay attention on these sections in the annual report. If you asked about the important information in the annual report, I would say that all of the financial data are very important. Since we already have these facts before the annual report is published and we couldn't wait that long, so most of the time we obtained the financial data from the website not directly from the annual report. For example, in some situations if we have to wait for the information in the annual report until the following April, at that time the overall situation or figure might be changed already.' (Fund manager)

The interviewees prefer the qualitative sections because these sections informed them of the executives' visions and the company's future direction. Moreover, they pay attention in the companies' historical information, because this information shows the companies' performance and development. They asserted that the more the companies disclose historical information, the more benefit they get.

Theme V: The auditor and the annual report

The fifth theme is about the auditor and the audit report. In this theme, there are two subsections as summarised in Figure 5-5.
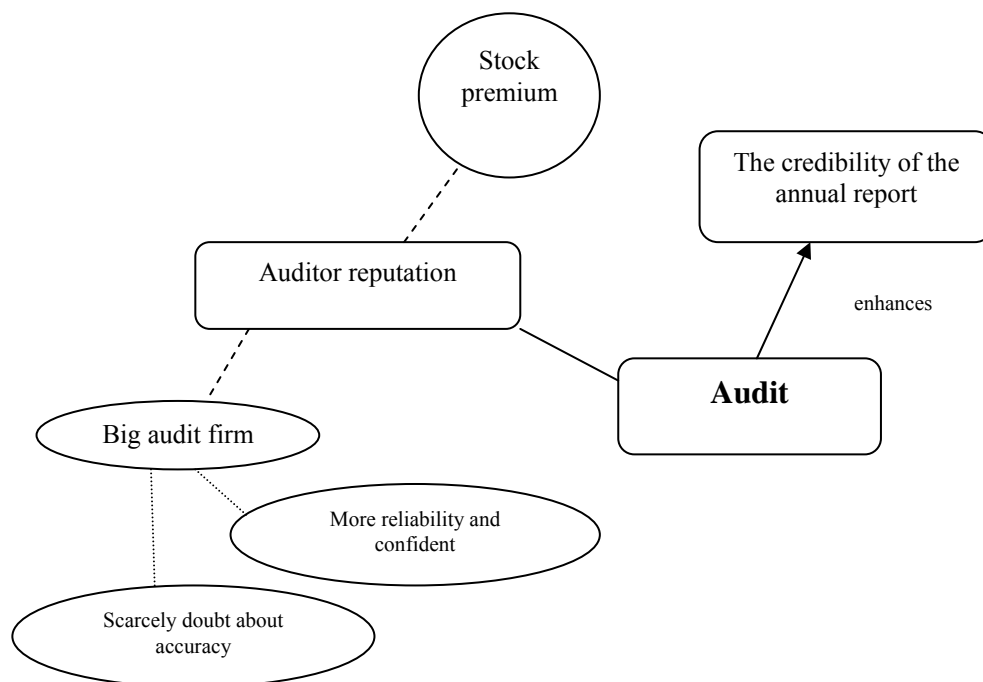
Figure 5-5: Auditor and the credibility of the annual report

The securities analysts and fund managers generally indicated that the audit is important. In particular, they suggested that, as the auditors verify the accuracy of the financial statements, they are increasing the credibility of the financial report. However, the reputation of the auditor is seen as important to the credibility of the annual report. It seems from the interviews that big audit firms, or the international firms, are perceived as more credible than smaller or local audit firms. For example:

> Case A: 'The reputation of the audit firm has an important role. An international audit firm or the audit firm with much experience would be more credible than a local audit firm. However, some listed companies have limited budgets; thus, they cannot hire an international audit firm because they cannot afford the audit fee. Therefore, if the audit firm licensed and approved by the Securities and Exchange Commission, that firm would have more credible and reliable.' (Securities analyst)

Most interviewees have confidence on the statements audited by big audit firms. They do not doubt in an accuracy of the financial statements which have been audited by big audit firms because they believe that those statements are examined well by audit team. The big audit firms are better known than small audit firms. A big audit firm's reputation could be harmed if there are any problems with in the financial statements that it audited. Therefore, they are quite sure that the big audit firms do not want to discredit their firm by making any mistakes and risk their reputations; they would have try their best to examine the financial statements. Moreover, big audit firms usually have more money to invest in their audit teams and audit tools which effect on the audit process.

Some of the interviewees stated that the reputation of audit firm enhances the credibility of the annual report. They perceive that financial statements which audited by the big audit firms, when compared with the ones audited by small audit firms, to be more reliable and more confident. For example:

> Case E: 'Uhmmm….. Reputation?…….if you are talking about reputation, there are some difference among audit firms, something related to credibility. We usually give more credit to big audit firms than small audit firms. We have to pay more attention to the statements that audited by small audit firms.' ' ….. some audit firms that meet the requirements and are approved by the Securities and Exchange Commission of Thailand (SEC) also provided us with odd

statements, and most of the odd statements come from small audit firms. Consequently, the images of small audit firms are on the negative side, but I did not mean all of the small audit firms. There are some good small audit firms too. Therefore, we should be careful when looking at the financial statements.' (Fund manager)

Case F: 'For psychological reasons there are differences. At present, the Securities and Exchange Commission of Thailand (SEC) declared the list of auditors who are qualified to audit listed companies and I am not supposed to indicate whether their audit quality is different, we assume that there is no difference. In fact, if they are Big Four, we will be more confident as their teams have more quality and are well prepared. For example, some listed companies may choose some audit firm on SEC list because the audit fee is cheaper, or because they can influence on audit firm, or can endorse some accounting transaction. If they choose a Big Four instead, we assume that they have internal audit and will not allow their auditors or staff to act against the regulations. I admit that I have some bias. If the report was audited and certified by a Big Four audit firm, I am sure that I can rely on those figures. If not, I can hardly rely on the financial statements and have to investigate the details carefully. I believe that there are differences in the result.....' (Fund manager)

Moreover, the interviewees indicated that when they use the financial statements audited by big audit firms, it seems that they do not doubt about the accuracy of the statements.

However, some of the interviewees argued that even though the audit is very important and increases the credibility of the financial statements, they did not put too much weight on the reputation of audit firms. They only attend to what is highlighted in the audit report. For example:

Case B: '…For me, the reputation of the audit firm does not enhance the creditability of the annual report. The thing that I am concerned about the company itself, and the company's share price depends on its performance, not the audit firm. If the companies show good performance, it means that they are successful, but if not, it means that they failed. Even though the unsuccessful company hired the Big Four audit firm, it could not turn from unsuccessful result to be a successful one.' (Securities analyst)

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Furthermore, they asserted that the reputation of the audit firm does not effect on the stock premium.

> In case F: '… I do not think it (the reputation of the auditor) matters. Uhmm… for example, assume that there are two financial statements. The first statement verified by Big Four, while another statement verified by audit firm ABC which is approved by the Securities and Exchange Commission of Thailand (SEC). If you asking whether the share price of these companies are different or not, I do not think it is different. The reason is that they have met the minimum requirements of the SEC which means that they must be approved ….., therefore it is indifferent.' (Fund manager)

5.2 Discussion

The information used by securities' analysts and fund managers comes from both public and private disclosures by companies. Companies are required to disclose some of the information, but companies may also disclose additional information voluntarily. The information itself may be quantitative or qualitative, and some of the information is audited.

Thai securities analysts and fund managers interviewed in this study used both public and private disclosures, with a tendency to prefer private disclosures. Public disclosures, particularly in the annual report, often formed the background to private contact with company management. An analyst or fund manager who is not familiar with the company will analyse its annual reports in order to develop a preliminary understanding of the company before meeting its management. Analysts and fund managers with some knowledge of the company will use the information contained in the annual report and other disclosures in order to identify issues to be explored with management.

Securities analysts and fund managers used both quantitative and qualitative information, with some having preferences for one type over the other. Quantitative information is perceived to be more about the past, whereas qualitative information may provide a guide to the future direction of the company. Although the annual report contains both quantitative and qualitative information, much of the quantitative

information is available from other sources prior to the publication of the annual report. Securities analysts and fund managers therefore tend to focus more on the qualitative information within the annual report. This not only provides background for private contact with the company, it also provides a context for interpreting the quantitative information. So predictions about future financial performance may be based on past tends and the narrative disclosures about the future direction of the company. Some company disclosures are mandatory whereas other disclosures are made voluntarily. Companies are seen to make voluntary disclosures to increase transparency and enhance their share prices. Companies are perceived to increase voluntary disclosures after problems.

The financial statements of Thai listed companies are audited. Generally, the value of the audit report is seen to depend on the reputation of the auditor. Most of those interviewed perceived greater value in the audit report of one of the Big Four international firms, although others indicated that all auditors licensed for listed companies should provide good standard reports. The good reputation of the auditor is seen both to enhance the value of the disclosures and to increase investor confidence in the company which would be reflected in its share price.

The securities analysts and fund managers interviewed perceived a link between the amount and quality of company disclosure and the behaviour of the company stock in the market. In particular, securities analysts and fund managers suggested that the amount and quality disclosure is associated with a stock premium. The asymmetry of information between company managers and outsiders is reduced through disclosures by the company. It is not only the amount and timing of the disclosures that seem to be important, it is also their quality and, in respect of audited financial information, the reputation of the auditor. This is consistent with the findings in the existing literature (Healy & Palepu, 2001; Mitton, 2002; Zhou, 2007)

What emerges from the interviews here is that the degree of transparency in both the public and private sources of information is important. There is the possibility that securities analysts and fund managers compensate for weak public disclosures by greater reliance on private information from the company's management. If this is the case, then broader measures of disclosure, such as those provided by the Association

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of Investment Management and Research (AIMR) ratings, provide a better indication of transparency than measures focusing on the analysis of the content of public statements, such as annual reports. Ideally, studies of the impact of the effect of disclosures on capital market behaviour and stock pricing should include measures of both public and private disclosures.

The findings from the first part bring to the study in the second part of the study. The following chapter explains the conceptual framework and the research hypotheses development which used in the second part of this study.

Chapter 6

The quantitative study: The conceptual framework and the research hypotheses development

The conceptual framework and the research hypotheses for the second part of the research, the quantitative study, are developed in this chapter. The main research objective for this second part of the study is to examine the relationship between the level of voluntary information disclosure and stock market liquidity. The chapter is divided into three main sections. The first section develops the conceptual framework for the quantitative part of the study, linking voluntary disclosure, information intermediaries and stock market liquidity. The second section contains a summary of the literature related to the conceptual framework of this study. This is divided into four sub-sections looking at evidence on: (i) the relationship between the level of voluntary information disclosure and stock market liquidity: (ii) corporate disclosure and auditor firm size; (iii) auditor reputation and information asymmetry; and (iv) corporate disclosure and the size of analysts following for the company. The research hypotheses to be tested in this study are developed in the third section. The final section presents a brief summary of the chapter.

6.1 The conceptual framework.

The framework linking corporate disclosure and stock market liquidity developed in Chapter 2 (section 2.4) is developed further in this chapter in order to incorporate findings from the qualitative part of this study. Specifically, the qualitative part of the study identifies two factors important for understanding disclosure and stock market liquidity: (i) auditor reputation and (ii) the number of financial analysts following a company. In capital markets, auditors and analysts are important specialised information intermediaries. Auditors enhance the credibility of the information that companies disclose, while analysts convey private information from company managers to outside investors. This helps mitigate investor uncertainty about the inequality of information between managers and outside investors, and between informed and less-informed investors.

a.) Auditors

Reliable information is important to the functioning of capital markets. Auditors play an important role by attesting to the quality of a company's financial statements, providing investors with independent assurance that the statements conform to requirements. Some previous studies (e.g. Korthari, 2001) suggest that investors generally regard accounting information as credible. Healy and Palepu (2001) provide a conceptual framework linking the role of auditors to accounting information disclosure in the context of information asymmetry. They emphasise that auditors can help companies improve the quality of accounting information disclosure, thus reducing the information gap between market participants. This reduction in information asymmetry reduces a company's cost of capital and enhances market liquidity. Amihud and Mendelson (1988), consistent with Healy and Palepu (2001), assert that companies can reduce the cost of capital and enhance market value by increasing liquidity through more transparent disclosure.

However, Healy and Palepu (2001) note that research directly examining whether auditors significantly enhance the quality and credibility of financial statements is limited. Therefore, the size of the audit firm was added to the conceptual framework

of this study to examine whether size, as a proxy for audit quality and auditor reputation, is associated with: (i) the level of voluntary information disclosure and (ii) stock market liquidity.

b.) Information intermediaries

Financial analysts act as information intermediaries in capital markets. They collect information about companies they follow from different sources, through both public and private channels, and evaluate current performance in order to forecast future earnings, cash flows and prospects. They then convey this information – accompanied by buy, hold or sell recommendations – to investors (Healy and Palepu, 2001). Prior literature shows that analysts' earnings forecasts and stock recommendations are broadly distributed, and significantly affect stock market reactions.

Research supports the view that analysts convey information and improve information efficiency in capital markets (e.g. Francis & Soffer, 1997; Barth & Hutton, 2000). By producing and conveying valuable information to uninformed investors/outsiders, analysts reduce the information gap between informed investors/insiders and uninformed investors/outsiders. Therefore, better-informed information intermediaries should affect market liquidity and enhance market efficiency, although their effectiveness depends on the quality of the information they acquire.

Company insiders are likely "informed investors" with access to quality information about a firm's prospects at no cost. To mitigate this information asymmetry between informed and uninformed investors, financial analysts, as information intermediaries, provide competition to informed investors, reducing their trading advantage. Brennan and Subrahmanyam (1995) suggest that financial analysts, by rapidly disseminating information to the public, create a more level-playing field for traders and generate a positive impact on liquidity. Better-informed financial analysts can play a beneficial role in capital markets by reducing the information advantage of company insiders/informed investors.

However, little research exists on the relationship between corporate disclosure and the number of financial analysts following a company/stock. The number of analysts

following a company was incorporated into the current conceptual framework in order to investigate whether the number of analysts is associated with: (i) the level of voluntary information disclosure and (ii) stock market liquidity.

The conceptual framework of this study links voluntary disclosure, audit quality, financial intermediaries, and stock market liquidity together. This framework is depicted in Figure 6-1. Previous evidence related to voluntary disclosure, stock market liquidity, and information intermediaries is discussed in the following section, and hypotheses for the quantitative study will be developed in the following section.
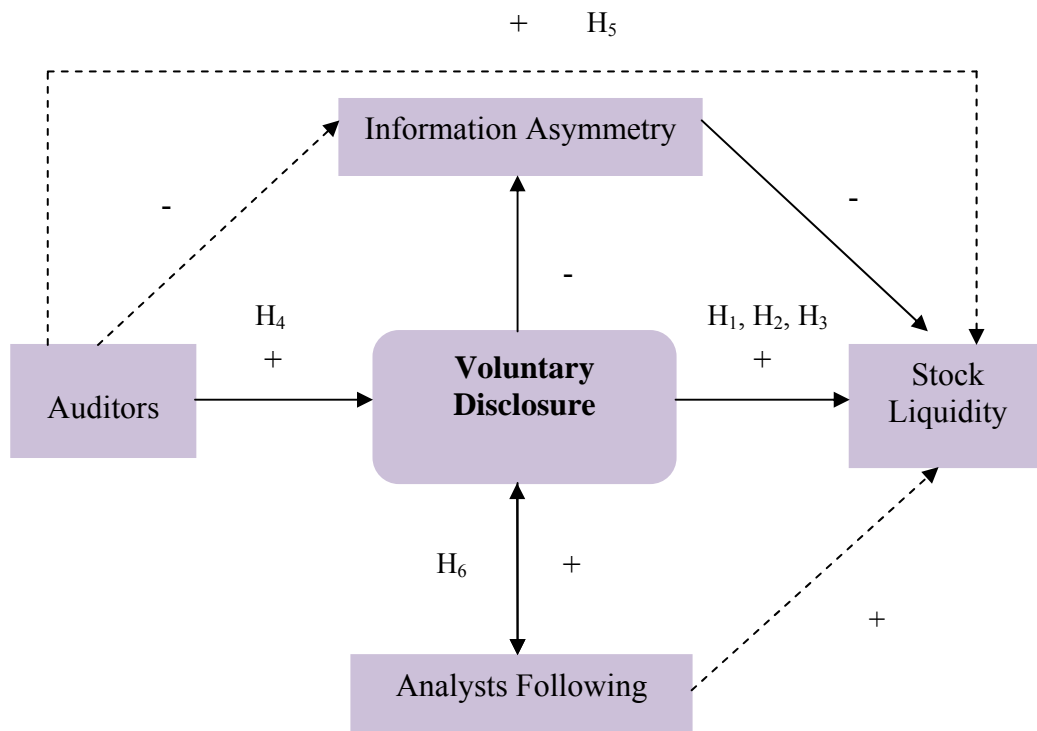
Figure 6-1: The conceptual framework linking voluntary disclosure, stock market liquidity, and information intermediation

6.2 Previous research

This section considers the literature on: (i) level of voluntary information disclosure and stock market liquidity; (ii) auditor characteristics and information asymmetry; (iii) auditor characteristics and level of corporate disclosure; and (iv) level of corporate disclosure and analysts following.

Evidence on voluntary disclosure and stock market liquidity

The capital market consequences of voluntary disclosure are discussed in Section 2.3. Companies may disclose more information voluntarily in response to the perceived illiquidity of their shares in the market. Disclosure of additional information consequently aims to improve stock market liquidity. It is important to signal that the measurement of market liquidity is complex and often subject to measurement problems. The disclosure literature has shown that high levels of voluntary disclosure and high quality of public disclosures (such as annual reports, press releases, and SEC filings) mitigate information problems among market participants, and consequently increase stock market liquidity. Most of the finance and accounting literatures in this field; which considers both the theoretical and empirical relationship between the level of disclosure and information asymmetry, has been conducted using samples of US companies.

Welker (1995) investigates the relationship between the stock market liquidity and corporate disclosure policy. Using the Association for Investment and Management Research (AIMR) disclosure score and the bid-ask spread as a proxy for liquidity, his study covers the years 1983 to 1990. He finds a negative relationship between disclosure policy and bid-ask spreads. His findings suggest that the greater of the information disclosures, the lower the bid-ask spreads. This is due to the decrease in perceived information asymmetry between market participants. Healy, Hutton and Palepu (1999) also examine the effect of substantial increases in disclosure levels. They use the AIMR disclosure score and bid-ask spread for the years 1980 to 1990. They find that companies that increase their disclosures ratings experience an increase in the liquidity of their shares and in the price of their shares. In other words,

companies making sustained increases in disclosure quality experience higher stock market liquidity through narrower relative bid-ask spreads.

Heflin, Shaw and Wild (2001) also investigate the relationship between disclosure quality and market liquidity. They acknowledge that information quality is important for market liquidity. Quality accounting disclosures are considered as means of reducing information asymmetries across traders and increasing the ability of equity traders to effectively execute stock trades when needed and at reasonable costs. They use 211 American companies from 1988 to 1989 and find that company with higher quality disclosures have lower bid-ask spreads, which imply that high quality disclosures enhance market liquidity by reducing effective spreads.

While only a few studies examine using the sample from non-Us market. Leuz and Verrecchia (2000) use a sample of 102 German companies included on the DAX 100 in 1998 to study bid-ask spreads. They analyze companies that report under the International Accounting Standards or US-GAAP. Their findings shown that these companies have lower bid-ask spreads than companies that report under the German Accounting Standards. Petersen and Plenborg (2006) investigate the relationship between the level of voluntary disclosure and the information asymmetry for 36 industrial companies listed on the Copenhagen Stock Exchange during the period 1997-2000. They constructed a disclosure checklist in attempt to measure the level of voluntary disclosure, used the bid-ask spread and the turnover ratio as their proxies for information asymmetry. The results from this study indicated that voluntary disclosure is negatively associated with proxies for information asymmetry and so reduces information asymmetry.

Previous studies, therefore, suggest that there are relationships between the level of voluntary information disclosure and information asymmetry and market liquidity. This is summarised in Figure 6-1. The relationship between the level of voluntary information disclosure and the stock market liquidity forms the basis for the first, second and third research hypotheses of the quantitative part of this study.

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Evidence on corporate disclosure and audit quality

The relationship between audit firm size and audit quality is well established in the literature. Francis (2004) argues that there is evidence to support the argument that the financial statements of companies audited by large audit firms are of higher quality. One of the reasons put forward for to explain this is that, because large audit firms have established brand names and reputations, they have incentives to protect their reputation by providing high-quality audits. Auditors' reputations may be at risk if they are associated with companies whose reporting practices are perceived as being of lower quality (DeAngleo, 1981). Therefore, large audit firms may encourage their clients to disclose more information in their published financial reports than is required by regulations in attempt to preserve their reputations (Craswell, Francis & Taylor, 1995). On the other hand, small audit firms do not possess the power to influence the disclosure practice of their clients. Rather, they attempt to meet the needs of their clients in order to retain them (Wallace & Naser, 1995).

The results of studies connecting the level of disclosure to the size of audit firms contain mixed results. Some studies report a significant relationship between audit firm size and the level of disclosure (Singhvi & Desai 1971; Craswell & Taylor 1992; Wallace & Naser 1995), while other studies do not find such a relationship (Wallace, Naser & Mora 1994). It is also expected that companies audited by the large audit firms will have a higher level of internal control and to follow the guidelines and audit methodology of the international audit firms. It is therefore expected that the level of information disclosure by companies audited by the large audit firms will be higher than by companies audited by local audit firms.

The above discussion suggests a positive relationship between audit quality and the level of voluntary disclosure as summarised in Figure 6-1. This relationship be the basis of the fourth research hypothesis of the quantitative part of this study.

Evidence on audit firm size and information asymmetry

Prior research suggests companies can enhance their value by increasing voluntary disclosures (Diamond & Verrecchia, 1991). Similarly, agency cost theory from Jensen and Meckling (1976) suggests that managers earn benefits from the reputation of a high quality auditor in the sense of increase the credibility of the information that they disclose. Companies therefore have incentives to increase additional information disclosure and employ high quality auditors as complements to mitigate information asymmetry and enhance the companies' valuations.

There are only few studies that have directly investigated whether audit quality enhances disclosure quality and reduces information asymmetry. One of the studies is by Schauer (2003) who uses a US sample. He investigates the relationship between bid-ask spreads and auditor-type: Big-Six audit firms, national audit firms, and other audit firms. With this three-tier classification of audit firms, he finds that the companies audited by Big-Six audit firms have lower bid-ask spreads than those audited by third tier audit firms, and that companies audited by national audit firms also exhibit lower spreads than those audited by third tier audit firms. However, he finds no difference in bid-ask spreads between the companies audited by Big-Six and those audited by national firms.

Another study by Zhou (2007) examines the association between information asymmetry, measured by bid-ask spread, and the level of accounting information following the adoption of new auditing standards in China. The results indicate that the sample experienced significant reductions in their bid-ask spreads following the adoption of the new auditing standards. However, no significant result change is found for companies in the control group whose financial statements were prepared in accordance with international accounting standards and were audited with international auditing standards.

The foregoing literature suggests a negative relationship between audit firm size and information asymmetry, which in turn implies a positive relationship between the audit firm size and market liquidity as depicted in Figure 6-1. The relationship

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between the audit firm size and market liquidity will form the basis of the fifth research hypothesis of the quantitative part of this study.

Evidence on corporate disclosure, analysts following and information asymmetry

As analysts have an important role in conveying information from the listed companies to the investors, the information-related activities of analysts are likely to influence the trading activity of investors. Previous studies show that the extensive voluntary disclosure can help reduce information asymmetry between informed and uninformed investors, and this information also provides financial intermediaries with a better picture of companies' financial performance and capacity (Bhushan, 1989; Lang & Lundholm, 1996). When the companies disclose more information, the additional information will enable the analysts to deliver higher quality services. Therefore, it is possible that the companies that disclose more information are more likely to attract a large number of analysts following than other companies which disclose less information. Thus, if the higher analyst following is associated with an increasing information disclosure, it is be possible to conjecture that increasing in the number of analyst following mitigates the information asymmetry and leads to an improvement of investors confidence and enhances stock market liquidity. Alternatively, it may be that the higher the number of analyst following a company the greater pressure for the companies to disclosure more information. This will also help mitigate the information asymmetry and increase stock market liquidity. These arguments are supported by the study of Roulstone (2003), who investigated the relationship between analysts coverage and market liquidity and found that increased analysts following leads to greater liquidity.

The foregoing literature suggests a positive relationship between the number of analyst following and market liquidity as depicted in Figure 6-1.

However, the literature shows a complex relationship between financial analysts and the amount of disclosure by companies. It is not clear that whether financial analysts prefer to follow companies that disclose more, rather than less, information. Some studies (see, for example, Bhushan, 1989; Lang & Lundholm, 1996) point out that

extensive voluntary disclosure can help reduce information asymmetry between informed and uninformed investors, and provides financial intermediaries with a better picture of companies' financial performance and capacity. This enables them to deliver higher quality, and more reliable, forecasts. Similarly, Healy and Palepu (2001) indicate that increasing information disclosure potentially enables financial analysts to create valuable new information. In addition, increased disclosure by companies can lead to increased accuracy of analyst forecasts and recommendations (Bushman & Smith 2001). This would imply that increased disclosure increases the demand for analyst services.

On the other hand, higher level of information disclosure could pre-empt analysts' ability to deliver managers' private information to investors, leading to a decline in demand (Healy & Palepu 2001). However, although there are only a few studies examining the relationship between voluntary disclosure and analysts following, the limited prior research in this area has found evidence consistent with analyst following being positively related to the level of information disclosure.

Bhushan (1989) finds that financial analysts' coverage depends on the demand and supply of analysts' services. Bhushan's model predicts that financial analyst following is determined by company characteristics, including corporate disclosures. He documents that these two variables could be either complementary or substitutes. The relationship is complex and depends on the role of financial analyst in the market. Lang and Lundholm (1996) examine the association between the number of analysts following a company and voluntary disclosure in the U.S market. They use data from the Financial Analysts Federation Corporate Information Committee Report (FAF). The authors find the evidence that companies with higher level of policy disclosure have a larger analyst following. This positive relationship between analyst following and voluntary disclosures enhances the understanding of the role of financial analysts in capital market.

Hope (2003) also tests the relationship between voluntary disclosure and analysts following, using the international sample. The findings show that voluntary disclosure is helpful for financial analysts at an international level. Moreover, the results also indicate some interesting points in that not all forms of information disclosure are

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equally important to financial analysts. Hope reports that analyst following is more strongly associated with the extent of note disclosure rather than the comprehensiveness of the basic financial statements.

Therefore, the literature here could suggest a positive relationship between the level of voluntary disclosure and the analysts following as portrayed in Figure 6-1. This relation will form the basis of the sixth research hypothesis of the quantitative part of this study.

6.3 Research hypotheses development

The previous literature on corporate disclosure suggests that information quality, the level of information disclosure, is important for market liquidity. Most researchers argue that increasing accounting disclosure should reduce information asymmetry not only between companies and stockholders but also among investors. Prior research shows that the lower information asymmetry, as a result from the provision of extensive accounting disclosure, tends to lead to higher market liquidity.

According to Heflin, Shaw and Wild (2001), the quality of corporate disclosure can mitigate information asymmetry and enhance stock market liquidity, because accounting disclosures are considered as means of increasing the ability of equity traders to effectively execute stock trades when desired and at a reasonable cost. Welker (1995) and Healy Hutton and Palepu (1999) find the relationship between the level of corporate disclosure and relative bid-ask spreads are negatively. These results are consistent with Heflin, Shaw and Wild (2001) who report that companies with higher quality disclosure have lower effective relative bid-ask spreads. This evidence suggests that disclosure quality and spreads are negatively related. This may be explained in term of the perceived reduction in information asymmetry between market participants.

According to Leuz and Verrecchia (2000) and Heflin, Shaw and Wild (2001), there is little direct evidence on the relationship between corporate disclosure quality and

stock market liquidity. Moreover, most empirical results on the link between information disclosure and information asymmetry are based on samples of US companies.

The above discussion motivates the main purpose for the second part of this study. That is to provide evidence on the relationship between the level of disclosure, information asymmetry, and stock market liquidity based on samples of Thai listed companies. Therefore, the main research question for this part of the study starts with the question:

How does the level of voluntary information disclosure effect the liquidity
of shares traded on the Stock Exchange of Thailand?

Hypothesis 1: Market liquidity and information disclosure

The previous disclosure literature shows evidence that there is a positive relation between the levels of information disclosure and the market liquidity. By using AIMR disclosure ratings and based on the samples of companies from the US, Heflin, Shaw and Wild (2001) hypothesised and found evidence that higher quality of disclosures enhances a company's market liquidity. For comparison purposes, the first test of this study intends to investigate that whether Heflin, Shaw and Wild (2001) finding also holds in the sample of companies from Thailand.

As stated earlier, this study intends to investigate the relationship between stock market liquidity and the level of voluntary information disclosure. In measuring stock market liquidity, Welker (1995), Bushee and Noe (2000), and Leuz and Verrecchia (2000) acknowledge that it could be measured using both trade-based and order-based measurements, for instance transaction volumes and bid-ask spreads. Following Heflin, Shaw and Wild (2001), this study uses the effective relative bid-ask spread as the measure of stock market liquidity. The effective relative bid-ask spread is likely to be better spread-based measure for market liquidity than either raw or relative spreads. In Thailand, the ask price is the best price associated with selling, while bid (offer) price is the best price associated with buying. In measuring the level of

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voluntary information disclosure, in contrast with previous research, this study employs two different approaches. These are the construction of a disclosure index and an analyst rating score. Finding evidence in favour of this hypothesis would lend further support to the results of Heflin, Shaw and Wild (2001). Thus, it would also motivate the research questions that follow:

Benchmark test: *Market liquidity is positively related to corporate disclosure levels.*

Two research instruments are developed in order to measure the level of voluntary information disclosure. The first research instrument, the disclosure index, is based upon the information disclosed in companies' annual reports. The reason of using the corporate annual report as a source of information is because the company's annual report is generally perceived as the main disclosure vehicle for company (Marston & Shirives, 1991). As noted by Knutson (1992), even though the corporate annual report is not the only source or means of information disclosure by listed companies, it is generally perceived as the most important source of information for analysts. Moreover, Lang and Lundholm (1993) indicate a high positive correlation between annual report disclosure and disclosure in other sources, such as press releases or regulatory filings. Furthermore, the findings from the qualitative part also indicated that the company's annual reports are often seen as important sources of information for Thai financial intermediaries. Most of the interviewees argued that even though the annual report is of limited value because of the delay in disclosure, it is a precursor to direct contact with the senior manager of company. Analysts and fund managers who are not familiar with the company will study its annual reports in order to develop preliminary understanding of the company before meeting its management.

Moreover, Thai financial intermediaries also indicated that most listed companies are seen to make voluntary disclosures, or disclose more additional information, in order to increase their transparency and the perceived quality of the companies. Consequently, these additional information disclosures (which increase the companies' transparency) will restore investor confidence, and enhance the market liquidity and their share prices. This finding is consistent with many previous studies (Welker, 1995; Healy, Hutton & Palepu, 1999; Heflin, Shaw & Wild, 2001) which show the level of disclosure decreases the information asymmetry. Consequently,

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increase investor confidence effects on the market liquidity. Therefore, the first research instrument is focused on the information that the companies disclose publicly, with a specific focus on the company's annual report and emphasis on the voluntary information disclosure. The procedure of how to develop the research instruments will discuss in detail in the following chapter.

As indicated above, unlike most prior studies, this study employs two approaches to measure the level of disclosure. The first approach is self-constructed disclosure index and the other approach is an analyst rating score. Following on these two research instruments, and the findings from the qualitative part which indicated that not only the public disclosures (in particular the annual report) that Thai securities analysts and fund managers generally used when making decisions, but they also tended to prefer private disclosures. Therefore, the above benchmark test can be divided into four following hypotheses.

Self-constructed disclosure index approach:

> *$H1_a$: Market liquidity is positively related to the overall disclosure score.*

> *$H1_b$: Market liquidity is positively related to the disclosure score from annual report.*

Analyst rating score approach:

> *$H1_c$: Market liquidity is positively related to the analyst rating score for public disclosure channel.*

> *$H1_d$: Market liquidity is positively related to the analyst rating score for private disclosure channel.*

The findings from the qualitative part and the above research question lead to the other research questions and hypotheses.

Hypothesis 2: Market liquidity and categories of information disclosure

Following Dye (1998), the most important questions to accountants are about what information concerning companies' conditions should be released, and where the information should be released. Bushman and Smith (2001) recommend accounting researchers should test hypotheses and thinking about the different types of disclosure and the differential economic benefits. Likewise, the results from Hope (2003) which indicate that not all forms of information disclosure are equally important to financial analysts. Hope documents that analysts following is more strongly associated with the extent of note disclosure rather than the comprehensiveness of the basic financial statements. The qualitative part of this study found that interviewees asserted that they tend to focus more on the qualitative, than the quantitative, information in annual reports. They pay more attention to the qualitative information because this kind of information provides background for private contact with companies, and it also provides a context for interpreting the quantitative information.

Following on Dye (1998), Bushman and Smith (2001), Hope (2003) and based on the findings from Thai financial intermediaries' perceptions, it can be inferred that not all types of information disclosure are of equal value to market participants such as securities analysts, fund managers, and general investors. Each type of information disclosure may have a different effect on the stock market liquidity. The finding from the first part of the study also indicated Thai securities analysts and fund managers tend to prefer qualitative to quantitative information. This finding would motivate to another research question, which is whether the four categories are equally related to stock market liquidity. This suggests the following hypothesis:

> *$H2_a$: The relationship between market liquidity and the disclosure score varies among the detailed sub-categories of the self-constructed disclosure index.*

This leads to another research question, which is whether each type of information disclosure affects market liquidity, and, if so, in what direction. This question is examined by testing whether the four categories from the self-constructed disclosure

index (strategic information, non-financial information, financial information, and channels of information and investor relations) have an impact on the market liquidity. The specific hypotheses tests are that:

> *$H2_b$: Market liquidity is positively related to the disclosure score from strategy information section of the annual report.*

> *$H2_c$: Market liquidity is positively related to the disclosure score from non- financial information section of the annual report.*

> *$H2_d$: Market liquidity is positively related to the disclosure score from financial information section of the annual report.*

> *$H2_e$: Market liquidity is positively related to the disclosure score from channels of information and investor relations section.*

Hypothesis 3: Market liquidity and the channels of information disclosure

The qualitative part of this study found evidence that Thai securities analysts and fund managers tend to prefer private disclosure to public disclosure. The significance of private disclosure channels to analysts and financial institutions has been identified by academics and recognised by UK policy makers (Holland, 1998). However, Heflin, Shaw and Wild (2001) found that higher public disclosure quality, rather than communications with analysts, is the most effective in reducing the information asymmetry. From the previous literature on corporate disclosure, there is limited evidence on the relationship between the market liquidity and the quality of private and public disclosure. This motivates to another research question, which is whether public disclosure, or rather private disclosure, is most related to increase market liquidity. In order to have a better understanding whether the level of public disclosure or private disclosure, or both, impacts the market liquidity, the third hypotheses are as follows:

> *$H3_a$: The relationship between market liquidity and the analyst rating score varies between the channels of disclosure.*

H3_b: The private disclosure channel is more likely to have greater effect on market liquidity than the public disclosure channel.

Hypothesis 4: The size of audit firm and information disclosure

The literature considers the relationship between audit firm size and audit quality. The auditor plays an important role in controlling the quality of information disclosed by their clients. Large audit firms (the so-called "Big Four" international audit firms) are perceived to be associated with high quality reporting. It is also assumed that the companies audited by these large international audit firms will have higher levels of internal control while following the guidelines and audit methodology of these audit firms. It is therefore expected that the level of information disclosure by companies audited by these large audit firms will be higher than by companies audited by local audit firms.

Evidence from previous studies supports this argument. Teoh and Wang (1993) examined the association between auditor size and auditor quality by testing whether the earnings response coefficient (ERC) differs between Big Eight[12] and non-Big Eight audit firms. They found that the ERCs of companies audited by the Big Eight audit firms are statistically significantly higher than for companies audited by non-Big Eight audit firms. Francis (2004) argues that the financial statements of companies audited by large audit firms are of higher quality. One of the reasons put forward to explain this is that, because large audit firms have established brand names and reputations, they have incentives to protect their reputation by providing high-quality audits. Thus, the large audit firms may be more likely to ensure transparency, report misstatements and non-compliance with mandatory reporting requirements, and eliminate mistakes in a company's financial statements because they have a greater reputation to uphold (DeAngelo, 1981).

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[12] The precursor, before mergers and acquisitions, to the current Big Four.

The reputations of large audit firms may be diminished if they are associated with companies (their clients) whose reporting practices are perceived as being of lower quality or if they negligently certify the annual reports of their clients (DeAngleo, 1981). Therefore, large audit firms may encourage their clients to disclose more information in their published financial reports than is required by regulation in an attempt to preserve their reputation (Craswell, Francis & Taylor, 1995), influencing the quality of their clients information disclosure. Additionally, even in cases where actual disclosure quality is not higher, the Big Four auditors may offer higher perceived disclosure quality and allay investors' fears because of their prominence and reputation. On the other hand, small audit firms do not possess the power to influence the disclosure practice of their clients. Rather, they attempt to meet the needs of their clients in order to retain them (Wallace & Naser, 1995).

The results of empirical studies connecting the level of disclosure to the size of audit firms are inconclusive. Some studies report a significant positive relationship between the audit firm size and the level of information disclosure (Singhvi & Desai 1971; Craswell & Taylor 1992; Wallace & Naser 1995), while other studies report no statistically significant association (Wallace, Naser & Mora 1994). This leads to the research question of whether companies engaging one of the Big Four audit firms are more likely to disclose more information than companies engaging other audit firms. The fourth hypothesis is therefore as follows:

> **H4:** *The level of a company's information disclosure is positively related to the size of its audit firm.*

Hypothesis 5: Market liquidity and the size of audit firm

Consistent with the foregoing studies (e.g. Singhvi & Desai, 1971; Wallace & Naser, 1995), the findings from the qualitative part of this study shown that Thai securities analysts and fund managers perceive the reputation of the auditor as being important to the credibility of the annual report. It seems from the interviews that larger audit firms, or international audit firms, are perceived as more credible than smaller or local audit firms. These findings suggest that big audit firms with good reputations are seen

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both to enhance the value of the disclosure and to increase investor confidence in the company which should be reflected in the market liquidity and in its share price. However, there are few studies which directly investigate whether audit quality enhances disclosure quality by reducing information asymmetry (Schauer, 2003). This motivates another research question which is whether the size of the audit firm improves disclosure quality and enhances stock market liquidity. From this follows the fifth hypothesis:

> **$H5_a$:** *Companies audited by Big Four audit firms are more likely to have higher market liquidity than companies audited by other audit firms.*

> **$H5_b$:** *Market liquidity is positively related to audit firm size.*

Hypothesis 6: Analysts following and information disclosure

Prior studies (e.g., Bhushan, 1989; Lang & Lundholm, 1996; Hope, 2003) suggest that there is a positive relationship between analysts following and voluntary disclosure. Lang and Lundholm (1996) find evidence that analysts are attracted to companies that disclosure more information. Moreover, Hope (2003) indicates that disclosing more information is helpful for financial analysts, but not all forms of disclosures are important to financial intermediaries. Miller and Piotroski (2000) test the relationship between analysts following and voluntary disclosure and found the evidence that managers are motivated to disclose more additional information in order to satisfy the analysts' need. They suggest that analyst coverage is one of the major determinants of disclosures. Therefore, it can be expected that companies with higher number of analysts following are more likely to disclose more information than other companies with smaller number of analysts following. The sixth hypothesis is then as follows:

> **$H6_a$:** *There is a positive relationship between financial analysts following and voluntary disclosure.*

6.4 Summary

This chapter describes the conceptual framework for the quantitative part of the study and considers evidence from the previous literature in the development of the research hypotheses. The following chapter will present the research instruments used in this study, as well as the methodology for the quantitative part of the study.

Chapter 7

The quantitative study: Methodology

This chapter describes the methodology used in the quantitative part of the study. It is divided into six main sections. The first section explains the specific research instruments and approaches employed to test the hypotheses. The second section describes the measurement of each variable; dependent variables, independent variables, including control variables. The data collection is described in the third section. This section also describes the sample selection procedures for this part of the research. Statistical techniques, including regression analysis, and several tests of significance are detailed in the fourth section of this chapter, and followed by an explanation of the strategies that were employed to enhance the validity and reliability of the research findings. Finally, there is a summary of this chapter.

7.1 Research Instrument

As stated earlier, the main objective for the second part of this study is to investigate the relationship between the level of information disclosure and market liquidity based on a sample of Thai listed companies. An appropriate approach to the measurement of the level of information disclosure is therefore important. Following Beattie, McInnes and Fearnley (2004), there are two principal approaches, subjective ratings and disclosure index (more detail see Chapter 2, Section 2.3), that have been employed in the previous studies of corporate disclosure. The benefits and the limitations of each approach should therefore be considered in order to select the most appropriate research instrument. The benefits and the limitations of each approach have already been discussed in detail in literature review chapter.

In Thailand, there is no subjective analyst rating such as the AIMR. However, there is an externally-generated disclosure score that is constructed by the Stock Exchange of Thailand (SET) and the Thai Institute of Directors Association (IOD) called "The Corporate Governance Report of Thai Listed Companies (CGR)". This disclosure score was launched by SET and IOD in order to study the development of corporate governance practices of Thai listed companies. It is also used as preliminary screening criteria to select companies for the Stock Exchange of Thailand's SET Awards and the Thai IOD's Board of Year Awards. The main purpose of the CGR score is to gauge the level of corporate transparency by analysing annual reports, regulatory fillings via the Internet, and the company websites. In order to access the corporate transparency and disclosure practices of Thai listed companies, CGR identifies disclosure items in its evaluation criteria. There are 123 disclosure items in total. These items are grouped into the following five categories derived from the Organization for Economic Cooperation and Development (OECD) Principles of Corporate Governance: (1) rights of shareholders; (2) equitable treatment of shareholders; (3) role of stakeholders; (4) disclosure and transparency; and (5) board responsibilities.

This CGR score seems similar to CIFAR index and S&P scores which are based upon samples from many countries and used in previous studies. However, there are some

limitations. The first is that the CGR rating mainly focuses on the development of corporate governance practices, while the main purpose of this study is to examine the impact of the voluntary information disclosure. Another limitation of this rating is the way that the SET and IOD disclose the CGR scores to the public. The scores for each listed company are classified into six groups on a scale, which will be labelled by number of the National Corporate Governance Committee's logo. Thus, even though there is a sub-category related to disclosure and transparency (which intend to use as the disclosure proxy for this study) the researcher could not access the result of that part because the score result is published as an overall score. Most importantly, SET and IOD, because of confidentiality, refused to provide either the raw overall score or the scores for disclosure and transparency for each listed company.

As there are several limitations of the CGR score, a self-constructed disclosure index was developed as the main instrument for this study. In addition to the self-constructed disclosure index, a second research instrument was also developed. The results from the first part of the study indicated that Thai securities analysts and fund managers tend to prefer the private disclosures. This finding leads to the research question as to whether the level disclosure through the public or private disclosure channel, or both, impact on market liquidity. However, the evaluation of the private information disclosure is difficult to observe and measure directly. Therefore, in order to measure the level of private information disclosure, an analyst rating score was developed as the second research instrument for this study.

The following section describes two research instruments that used to measure the level of the company's disclosure. These research instruments are the disclosure index and the questionnaire survey of the views of Thai financial intermediaries on the level of the company disclosure.

Self-constructed disclosure index

The self constructed disclosure index is a direct measure with emphasis on the voluntary disclosure. The purpose of this index is to sufficiently capture the cross

sectional variation of voluntary disclosure level over the sample. The procedure for measuring the extent of disclosure is summarised as follows:

- Construction of a disclosure checklist
- Scoring the disclosure index
- Reliability and validity of disclosure score

Construction of a disclosure checklist

A specific voluntary disclosure index was developed for this study in order to capture the voluntary disclosure of information disclosed in company's annual report. A major task in constructing a disclosure scoring checklist is the selection of items expected to be voluntarily disclosed in company annual reports. Following Cooke (1989), the selection of disclosure items is not limited to the financial information from the financial report but includes the entire content of the annual report.

In this study, the construction process of the disclosure checklist follows Cooke (1989, 1991), Meek, Roberts and Gray (1995), Botosan (1997), Ferguson, Lam and Lee (2002), Francis, Nanda and Olsson (2008), and Petersen and Plenborg (2006). The disclosure checklist procedure began by identifying and generating a preliminary list of the disclosure index items from the list developed by Meek, Roberts and Gray (1995). Following Meek, Roberts and Gray (1995), the first disclosure checklist for this study divided into three categories, namely strategic, non-financial, and financial information. The reason for adopting Meek, Roberts and Gray (1995) checklist is the researcher intends to develop the current disclosure checklist to be consistent with the previous studies. Moreover, Meek, Roberts and Gray (1995) checklist has the measurement categories that most closely reflect voluntary disclosure behaviour for the sample companies of this study.

In the second stage of construction the checklist, the first disclosure checklist (which based on Meek, Roberts & Gray (1995)) was enhanced by adding other items which are considered to be relevant items to this study and also included in other similar

studies (Botosan, 1997; Ferguson, Lam & Lee, 2002; Francis, Nanda & Olsson, 2008; Petersen & Plenborg, 2006).

For the third stage of the construction of the checklist, a fourth category of the disclosure checklist was added to the disclosure checklist. This category is developed from the findings of the qualitative part of this study and referred to as "the channel of information and investor relations" category. There are therefore four categories used in this study: strategic information, other non-financial information, financial information, and channel of information and investor relations.

A pilot study was conducted using two annual reports from each of the seven industry groups. Some minor modifications were then made to the initial disclosure checklist.

Before the disclosure checklist was employed, the disclosure index items were examined by two auditors from a Big Four audit firm in Thailand, who specialise in Thai accounting practices and disclosure issues, in order to refine the list and to ensure that mandatory disclosure items were excluded from the disclosure checklist. This also confirmed the appropriateness of the items as voluntary in so far as the country is concerned. This led to the final version of the disclosure checklist

The final checklist consists of 108 items of disclosed information (see Appendix D). For the first three categories, all the information is from the company's annual report, only the fourth category used the information disclosed on the company's website.

Therefore, this checklist is based on the following four major categories of information types, and further, into fifteen subcategories, and distributed as follows:

	Number of items		%	
(A) Strategic information:				
1) General corporate information	2		2	
2) Corporate strategy	12		11	
3) Production	8		7	
4) Research and development	5		5	
5) Market strategy	7		6	
6) Competition and outlook	12		11	
7) Future prospects	_9_	_55_	_9_	51
(B) Non financial information:				
8) Information about directors	4		4	
9) Employee information	8		7	
10) Social policy and value added information	_7_	_19_	_6_	17
(C) Financial information				
11) Financial review	6		6	
12) Management discussion and analysis	_12_	_18_	_11_	17
(D) Channels of information and investor relations:				
13) Company offer multiple channels of access to information	3		3	
14) Company's web-site	11		10	
15) Investor relations department	_2_	_16_	_2_	_15_
		_108_		_100_

Scoring the disclosure index

Two main issues need to be resolved in respect of the scoring of the disclosure index. These are whether there should be weightings attached to the items in the index and the other is the scale for scoring each item. These are considered in turn.

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i.) Weighting the disclosure index scores

There are different methods weighting disclosure index scores. One of the most commonly used method from prior studies is an unweighted scoring method (see, for example, Cooke 1989, 1991; Meek, Roberts & Gray, 1995; Francis, Nanda & Olsson 2008; Petersen & Plenborg, 2006). The unweighted scoring method is considered as the most appropriate method for a study that is not focusing on the information needs of any specific user groups (Cooke, 1989; Hossain, Perera & Rahman 1995). This method is based on the assumption that each item of information disclosure is equally important in the corporate information users' decision making process. Some corporate disclosure studies have applied weights based on analysts' opinions (Buzby, 1975; Malone, Fries & Jones, 1993). This method brings about a certain degree of subjectivity and reflects the importance of certain types of information to the specific groups of information users (Firth, 1979). This may not properly reflect the preferences of all users of information in the annual report. However, Chow and Wong-Boren (1987) report that weighted and unweighted disclosure indices produce similar results.

As the purpose of this study is to measure the level of the information disclosure, rather than users' perceptions of the usefulness of the information disclosed, this study uses an unweighted index.

ii.) The level of disclosure index measurement

Most of the studies in the empirical disclosure literature (see, for example, Cooke, 1989, 1991; Meek, Roberts & Gray, 1995; Hossain, Tan & Adams, 1994; Ferguson, Lam & Lee, 2002; Haniffa & Cooke, 2002; Francis, Nanda & Olsson, 2008) use a dichotomous coding scheme. By this method, the researcher will value the disclosure index in terms of the presence of absence of each item. Other studies employ ordinal measures, usually scoring their disclosure items according to the quality of the information.

A dichotomous procedure was employed in this study. With this measurement method, the contents of the company's annual report are checked against the items on

the disclosure checklist and awarded as one (for disclosed item) zero (for not disclosed item) and N/A (if not applicable). To overcome the problem of incorrectly penalising the company for not disclosing an item that is not applicable, an information disclosure item was awarded as N/A only after having investigated and ensuring that no similar information could be found in any part of the annual report. In other words, the whole content of the annual report must be read before a decision was made in order to avoid penalising company for non-disclosure of irrelevant items. This approach has been used in previous studies (e.g., Cooke, 1989; Leventis & Weetman, 2004).

Therefore, in this study companies received a score of one if an item included in the disclosure checklist is disclosed and 0 if it is not disclosed. Since there are four categories of information from the checklist, the level of the information disclosed is measured as the sum of the total disclosure index $\left(DI_{ij}\right)$ across all categories. The total disclosure index $\left(DI_{ij}\right)$ for each category is then calculated as the ratio of the total disclosure for each category $\left(D_{ij}\right)$ to the maximum possible items score $\left(M_{ij}\right)$ for each category for a company to represent the level of disclosure. By doing so, the companies are not penalised for not disclosing the information that is not relevant to them. The total disclosure score $\left(D_{ij}\right)$ for category (i) for company (j) is derived from the following formula:

Total disclosure score for each category $\left(D_{ij}\right)$**_:_**

$$D_{ij} = \sum_{k=1}^{m} d_k$$

Where:
d = 1 if the item d_k is disclosed
         = 0 if the item d_k is not disclosed
m = actual number of relevant disclosure items $\left(m \leq n\right)$
i = for category
j = for company

As stated above, disclosure items are classified into the following four categories: strategic information, non financial information, financial information, and channels of information and investor relations. According to Meek, Roberts and Gray (1995), the different categories of information reflect the proposition that different types of information are disclosed for different reasons. Thus, scores for each individual company (j) are awarded for specific disclosure items within each category (i). The maximum disclosure score for each category is:

        (1) Strategic information: 55   points

        (2) Non financial information: 19   points

        (3) Financial information: 18   points

        (4) Channels of information and investor relations: 16   points

Therefore, the maximum possible disclosure score (M_{ij}) for category (i) for company (j) can earn varies:

Maximum disclosure score for each category (M_{ij}):

$$M_{ij} = \sum_{k=1}^{n} d_k$$

Where:
        d = expected item of disclosure
        n = the number of items which the company is
            expected to disclose, i.e.,
            $n(category_1) \le 55$, $n(category_2) \le 19$,
            $n(category_3) \le 18$, $n(category_4) \le 16$

The total disclosure index (DI_{ij}) for disclosure for a given category (i) for company (j) is derived from the following formula:

Total disclosure index for each category $\left(DI_{ij}\right)$***:***

$$DI_{ij} = \frac{D_{ij}}{M_{ij}}$$

where:

DI_{ij}	=	Total disclosure index
D_{ij}	=	Total disclosure score
M_{ij}	=	Maximum disclosure score for each company

In short, the level of disclosure DIS_j is measured as the total number of scores awarded to company j across all categories ($i = 1,2,3,4$). The level of disclosure is computed by the following formula:

$$DIS_j = \sum_{i=1}^{4} DI_{ij}$$

Since one point is awarded for each item disclosed in the annual report, in this study the scoring procedure differs from Botosan (1997). Botosan (1997) awards each item of quantitative information for two points and each item of qualitative information one point. She argues that quantitative information may be more precise, that is, more reliable, whereas qualitative measures may be more relevant. Arguably, qualitative information may in some cases provide investors with a better understanding of those company characteristics that determines the future earnings potential. Therefore, this study assigns an equal score to each of the two type of information, with only one point is given for each item of information disclosed, even if this item appears more than once in the annual report.

In order to ensure consistency of scoring, all annual reports were read through twice. After reading, analysing, and scoring all annual reports in the first round, a second round of scoring was conducted. The reason of doing this, rather than start the second round after each annual report, is to reduce the chances of the first scoring influencing the second scoring, and also to allow consistency in scoring all the annual reports. In a few cases where differences exist between the first and the second scoring, the annual reports were subjected to the third final assessment.

Reliability and Validity of disclosure score

Marston and Shrives (1991) assert that it is necessary to consider the reliability and the validity of the disclosure index. According to Hail (2002), corporate financial reporting is not easily evaluated because the development and application of a disclosure score relies heavily on a person's subjective perception. As with other studies, this study relies on the subjective judgement of the researcher in the development and application of the disclosure index. It is necessary to assess the validity and the reliability of the disclosure measure before applying this instrument in the study.

Reliability of disclosure score

Reliability refers to the consistency and dependability of the research measurement. In the context of disclosure score checklist, a reliable measuring instrument will always give the same result on different occasions assuming that what is being measured has not changed during the intervening period.

A variety of approaches are employed to assess the reliability of the research instrument. The first approach is look at inter-rater reliability by calculating Pearson correlation coefficients between disclosure score from the researcher and that from an independent rater. This correlation coefficient ranges from -1 to 1. A value of 1 implies that the two raters give the same scores, and -1 that there is an inverse relationship. A value of 0 implies that there is no relationship between the scores of the two raters.

Another approach to inter-rater reliability is the calculation of the Cohen's Kappa statistic. According to Donner and Klar (1996), the statistic "Kappa" is widely used as a chance-corrected measure of nominal agreement in a variety of application areas. The Kappa coefficient can range from 0 to with all values between 0 and 1 also being possible. Landis and Koch (1977) have proposed the following as standards for strength of agreement for the Kappa coefficient:

the Kappa coefficient 0　　　　　　　　poor

the Kappa coefficient .01 - .20　　　　slight,

the Kappa coefficient .21 - .40　　　　fair,

the Kappa coefficient .41 - .60　　　　moderate,

the Kappa coefficient .61 - .80　　　　substantial

the Kappa coefficient .81 – 1　　　　almost perfect.

The second approach to reliability is to look at internal consistency through use of Cronbach's alpha coefficient. Cronbach's alpha is a measurement of internal consistency that uses the various categories of the disclosure index to assess the degree to which correlations among the measurements are attenuated due to random error. The Cronbach's alpha coefficient can range from 0 (if no variance is consistent) to 1 (if all variance is consistent) with all values between 0 and 1 also being possible. The maximum value of alpha is one, when the correlation between each pair of variables is perfect. There exists no statistical rule to decide if the alpha is significant. However, George and Mallery (2003) provide the following rules of thumb for the Cronbach's alpha coefficient:

the Cronbach's alpha coefficient >.9　　Excellent

the Cronbach's alpha coefficient >.8　　Good

the Cronbach's alpha coefficient >.7　　Acceptable

the Cronbach's alpha coefficient >.6　　Questionable

the Cronbach's alpha coefficient >.5　　Poor

the Cronbach's alpha coefficient <.5　　Unacceptable

Validity of disclosure score

Validity is concerned with the degree to which a study accurately reflects the specific concept that the research instrument attempts to measure. In the context of disclosure index, the validity of disclosure score refers to whether the research instrument measures the actual level of financial disclosure.

Two approaches were employed in order to assess the validity of disclosure score of the research instrument. The first approach is the Pearson correlation coefficients

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among disclosure scores, and another approach is the Cronbach's alpha coefficient among disclosure items.

Analyst rating score

There is no disclosure rating similar to the one by AIMR available in Thailand. Further, private disclosure is difficult to observe and measure directly. Therefore, this study measures the level of both private and public disclosure using an analyst rating score. These rating scores were obtained by using data from the questionnaire survey mailed to Thai securities analysts and fund managers, and requesting them to rate the level of the company's disclosure for those companies that they were currently following. The process for the analysts rating score via the questionnaire survey is summarised as follows:

- Questionnaire procedure
- Validity of the questionnaire

Questionnaire procedure

The questionnaire survey was distributed to Thai securities analysts and fund managers whose names were disclosed on the website of the Securities and Exchange Commission (SEC) of Thailand as the licensed and approved persons, during the period of October 9th 2008 to December 15th 2008. Recipients were asked to return the questionnaire by post.

The questionnaire requested Thai securities analysts and fund managers to rate the level of the company's disclosure for those companies that they were currently following. A five-point Likert scale was used where one refers to the lowest level of disclosure and five refers to the highest level of disclosure.

The questionnaire is divided into two parts. For the first part, the securities analysts and fund managers were asked to rate the level of the company's disclosure for the

private disclosure channel, which include the communication between the respondents and the listed company's top executives or investor relations department, and on company visits. While the second part, the respondents were asked to rate the level of the company's disclosure for public disclosure channel, for example, the company's annual report, quarterly and other published information (see Appendix E).

The results from the survey questionnaire, therefore, contain two scores for each company. The first type of score is for private disclosure channel, and this score will be used to answer the research question that whether the level of public disclosure channel or private disclosure channel, or both, impacts the market liquidity. While, the second type of score is the score for public disclosure channel, which will be used as another instrument to assess the validity of the main research instrument, the self-constructed disclosure index instrument.

Following Sekaran (2000), the questionnaire survey developed for this study was sent along with a covering letter and a prepaid reply envelop. The covering letter was addressed to each securities analysts/fund managers of each company. To follow up, a reminder letter along with the questionnaire survey and a prepaid reply envelop was despatched approximately two months after the first round of the questionnaire survey.

Validity of the questionnaire

In order to assess the validity of the questionnaire, the questionnaire was reviewed by two Thai accounting academics who are experts in the area of disclosure, and by two Thai auditors from one of the Big Four audit firms. This procedure confirmed that the time required to complete the questionnaire was reasonable and that the questions were suitable for the intended audience. Some minor modifications to satisfy the expert academics' comments were made before the questionnaire was sent to the sample.

7.2 Variable Measurement

Nine variables are used in this study. These are described below together with the approach taken to measuring each of the variables.

Dependent Variable

The literature of accounting, finance, and economics provides various proxies for information asymmetry. These include the bid-ask spread, trading volume in a company's shares, and share price volatility. According to Leuz and Verrecchia (2000), the bid-ask spread is commonly thought to measure information asymmetry explicitly because it reflects the adverse selection problem that arises from transacting in company shares in the presence of asymmetrically informed investors. Less information asymmetry implies less adverse selection, which, in turn, implies a smaller bid-ask spread.

The effective relative bid-ask spreads

Prior literature cites different liquidity measures, including the quoted spread, relative bid-ask spread, and the effective relative bid-ask spread. Consistent with Lin, Sanger, and Booth (1995) and Heflin, Shaw, and Wild (2001), this study employed the effective relative bid-ask spread as a proxy for stock market liquidity. Heflin et al. (2001) acknowledge that the effective relative bid-ask spread is likely to be a better spread-based measure for market liquidity than other spreads because the effective spread is a better measure of true trading cost, which reflect actual transaction prices, than either raw or relative spreads[13].

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[13] The quoted spread is defined as the difference between the bid and the ask price, while the relative bid-ask spread is defined as the ask price minus the bid price, divided by the midpoint (the average of the bid ask prices). Both the quoted and relative bid-ask spread were not chosen as the dependent variable for the main study because Lee and Ready (1991) point out a problem when using the relative spread. They argued that the relative bid-ask spread is an inaccurate measure of liquidity because many trades occur at prices between the bid and ask price. However, these alternative measures of market liquidity were used as the dependent variable in the sensitivity analysis tests (Case I).

The effective relative bid-ask spread is equal to twice the absolute value of the difference between a transaction price and the midpoint of the bid and ask prices scaled by the midpoint. In an order-driven market, the ask is the best price associated with a selling limit order, whereas, the bid is the price associated with a buying limit order.

$$Effective\ spread = \frac{2\left|price - midpoint\right|}{\left((bid + ask)/2\right)},$$

where: $price = transaction\ price$

$midpoint = (bid + ask)/2$

To estimate the market liquidity of the sample companies, the data are collected on daily basis. The daily averages of bid, ask, and transaction price for each listed company were collected manually from the SETSMART[14] database. After that, the daily effective relative bid-ask spreads for each listed company were calculated, and then, the average across each listed company's daily effective relative bid-ask spreads to yield one observation per company. The period in this study covers the 100 trading days from 21st of April 2008 to 15th of September 2008. This is the period after the deadline for listed companies to submit their annual reports[15] to the Stock Exchange of Thailand.

Because the residual plots of the original data, the normality tests which based on Jarque and Bera (1980), and the tests of the heteroscedasticity which based on Breusch and Pagan (1979), and Cook and Weisberg (1983), reveal that there are violation assumptions in particular non-normality and the heteroscedasticity problems occur when running the raw (untransformed) data. To deal with the violation

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[14] SETSMART or abbreviated from 'SET Market Analysis and Reporting Tool' is the wed-based application from the Stock Exchange of Thailand that seamlessly integrates comprehensive sources about Thai listed companies. These include: company and securities details of all Thai listed companies, real-time and historical share prices and indices, securities and indices' statistics, real-time and historical news of listed companies, financial statements (including balance sheet, profit & loss statement, cash flow statements and notes to the statements), and major shareholders.. By using SETSMART, investors will have an alternative investment tool to access the same channel of information as Professionals.

[15] The Stock Exchange of Thailand has a legal obligation that all listed companies submit that their annual report to the SET within 110 days of the end the accounting period. This is the same deadline as sending the notification to shareholders of the Annual General Meeting (AGM).

assumptions of regressions, this study used the transformation of the dependent variable to remedy non-normality and the heteroscedasticity problem (Hair et al., 2006, p. 88). The results for the robust standard errors for all estimation models (with untransformed data) also provided in Appendix G and reported based on White's (1980) adjusted *t*-statistics.

Therefore the effective relative bid ask spread was transformed into reciprocal form. By doing so, the predicted value for each independent variable will change into an inverse relation, which is summarised below.

Method	Transformation	Regression Equation	Predicted Value ($\hat{Y}$)
Reciprocal model	Dependent variable $= \dfrac{1}{y}$	$\dfrac{1}{y} = b_0 + b_1 x + e$	$\hat{Y} = \dfrac{1}{b_0 + b_1 x + e}$

The second column shows the specific transformation applied to dependent variable. The third column presents the regression equation which used in the multiple linear regression analysis. The fourth column shows the "back transformation" equation used to restore the dependent variable to its original value; non-transformed measurement scale.

The Key Variables

There are three key variables applied in this study. These are measures of disclosure, audit firm size, and analysts following. The list of symbol and the expected sign for these variables is summarised in the Table 7-1.

Measures of disclosure

The measures of disclosure are constructed from two different sources: the company's annual report and the views of financial intermediaries. The level of information disclosure score for each method is calculated as follows.

i.) The level of disclosure: the construction of the disclosure index

As discussed in more detail above in section 7.1, the level of disclosure DIS_j is calculated as the sum of the total disclosure index (DI_{ij}) across all four categories. While the total disclosure index (DI_{ij}) for each category is a ratio computed by dividing the total actual score for the category (D_{ij}) by the total maximum score (M_{ij}) for that category that the particular company is expected to achieve. The level of disclosure is computed by the following formula:

$$DIS_j = \sum_{i=1}^{4} DI_{ij}$$

ii.) The level of disclosure: the questionnaire survey

As indicated in section 7.1, the disclosure score from the questionnaire survey can be calculated as the average of the rating level for each company's disclosure as rated by the financial intermediaries.

Auditor firm size

Audit firm size has not been used in prior research on the determinants of market liquidity. The reasons for including this as an explanatory variable follow from the findings from the first part of this study. Thai securities analysts and fund managers generally indicated the importance of the audit. They suggested that the auditors verify the accuracy of the financial statements, thereby increasing the credibility of the financial report. Moreover, the reputation of the auditor is considered as important to the credibility of the annual report. It seems from the interviews that big, or international, audit firms are perceived as being more credible than smaller, or local, audit firms. Most of the interviewees stated that they have confidence in the financial statements audited by large audit firms. In line with previous studies, the size of the auditor is measured as an indicator variable that takes the value of one if the company is audited by one of the Big Four, and zero otherwise. The Big Four auditors are PricewaterhouseCoopers, Deloitte Touche Tohmatsu, Ernst and Young, and KPMG.

Analyst following

Analyst following is measured as the number of analysts following a listed company. The number of analysts following a company is obtained from two sources; the first source is from the Securities Analysts Association's web site (www.saa-thai.org) and the other source is from the questionnaire survey. The number of the analysts following a company as shown on the Securities Analysts Association's web site is employed for the main model, while the number of the analysts following from the questionnaire survey is used in the sensitivity analysis test.

Control Variables

Following the prior research (Hanley, Kumar & Seguin, 1993; Welker, 1995; Brockman & Chung, 1999; Heflin & Shaw, 2000; Sarin, Shastri & Shastri, 2000; Heflin, Shaw & Wild, 2001), a set of control variables that have been found to be correlated with the market liquidity and corporate disclosure are included in this study. These variables are: share price, share price volatility, trading activity, and company size. This section discusses each of the control variables. Data are manually collected from SETSMART database in order to compute the measures of all these control variables.

Share price

According to Blume and Husic (1973), the share price is an indication for the risk of the stock. A higher stock price implies lower risk of the stock. This variable, therefore, included in the analysis and expect that share price should have a negative association with the bid-ask spreads. The study uses the daily averages of bid and ask price as a proxy for share price. This is computed for each company over the period of 100 trading days from 21st of April 2008 to 15th of September 2008. Based on prior research, this control variable is expected to have a negative relationship with the effective relative bid ask spread

Return volatility

Prior studies have confirmed the idea with evidence of a positive relationship between spreads and volatility (Tinic, 1972; Stoll, 1978; and Ho & Stoll, 1981). Ho and Stoll (1981) demonstrate that the more volatile the stock price, the more uncertain of the cost of holding the stock and consequently the wider the bid-ask spread. Hence, there should be a positive correlation between return volatility and the spread. Return volatility is incorporated into the analysis and computed as the standard deviation of daily share price. The period covers 100 trading days from 21st of April 2008 to 15th of September 2008. This control variable is predicted to have a positive relationship with the effective relative bid ask spread.

Trade size

Easley and O'Hara (1987) note that 'trade size introduces an adverse selection problem into security trading because, given that they wish to trade, informed investors prefer to trade large amounts at any given price'. This argument suggests that large trades tend to convey more information to the market and move quoted prices more than small trades which, in turn, increase the spreads (Lin, Sanger & Booth, 1995). Trade size is included to this analysis as one of the proxies for trading activity used in this study. It is computed as the daily average trade volume over the period of 100 trading days from 21st of April 2008 to 15th of September 2008. Based on the prior research, the relationship between this control variable and the effective relative bid ask spread is predicted to have positive association.

Trade frequency

Trade frequency is also incorporated in the analysis as a proxy for trading activity. Copeland and Galai (1983) assert that less frequent trading usually means lower trading volume, therefore, the bid ask spread is likely to be inversely related to measures of market activity. In this study, trade frequency is measured as the average number of transaction trades per day cover the period of 100 trading days from 21st of April 2008 to 15th of September 2008. Trade frequency is predicted to have a negative relationship with the effective relative bid ask spread.

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Company size

Prior studies usually used the company size as a proxy for the amount of information available regarding a company, because larger companies generally release more information than smaller companies. The release of information would mitigate the information asymmetry among the investors, thus, company size should be negatively correlated with the spreads (Chiang and Venkatesh, 1988). However, larger companies generally have a more complex capital, organisational, and business structure. These complexities could be an obstacle for the investors when they analyses the information about a company. Consequently, the investors may respond to these complexities by increasing their bid-ask spreads (Schauer, 2003). Company size is included in the analysis as control variable and measured as the market capitalisation of common equity at the end of the company's fiscal period, 31st of December 2007. The relationship between the company size and the effective relative bid ask spread is uncertain so there is no basis for the prediction of a sign.

Table 7-1: List of symbol and the expected sign of the variables

Variables	Proxy	Symbol	Type of measurement	Expected sign
Key Variables				
Market Liquidity	The Effective Relative Bid Ask Spread	SPREAD	Ratio Scale	
Disclosure level	The level of disclosure: checklist instrument	DS	Ratio Scale	-
	Overall disclosure	(overall)		
	Annual report	(annual)		
	Strategic information	(str)		
	Financial information	(non)		
	Non-financial information	(fin)		
	Channels of information and investor relations	(other)		
	The level of disclosure: questionnaire survey instrument			
	Public disclosure	DPUB	Ordinal Scale	-
	Private disclosure	DPRI	Ordinal Scale	-
Auditor	1 if the company is audited by "Big Four" audit firm, 0 if other	AUD	Nominal Scale	N/A
Analysts Following	The number of analysts following the listed companies	ANA	Ratio Scale	N/A
Control Variables				
Share Price	the daily averages of bid ask prices	PR	Ratio Scale	-
Return Volatility	the standard deviation of daily share price	PRVOL	Ratio Scale	+
Trade Size	the daily averages trade volume	TSZ	Ratio Scale	+
Trade Frequency	the average number of transaction trade per day	TF	Ratio Scale	-
Company Size	the market value of common equity	SIZE	Ratio Scale	N/A

7.3 Sample procedure and data source

The current study is an empirical investigation the relationship between the levels of information disclosure and the market liquidity based on a sample of Thai listed companies. This section will discuss the sample procedure, which includes the selection of the sample, the reasons behind the selection, the choice of the period covered, sample size, and the data source for each measure.

     i.)   **Sample for the self-constructed disclosure index instrument (checklist approach)**

The first main purpose of this study is to examine the relationship between the levels of information disclosure and the market liquidity of companies listed on the Stock Exchange of Thailand in 2007. Data for this study were collected mainly from the company's annual report, the company's web site, and the SETSMART database. Data related to the level of information disclosure were collected for the whole sample, and these data have been located and hand collected in the companies' annual reports and the companies' web sites. While financial data related to share prices, trading volumes, and bid and ask prices were retrieved from the SETSMART database.

There are three criteria for sample selection in this study.

- The first criterion is that the company should be included in the list of shares in the SET 100's index[16] during the period from July 1st 2008 to December 31st 2008.

- The second criterion is that there is a useable copy of each listed company's annual report for the 2007 year-end. Most Thai listed companies use the calendar year as their accounting year.

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[16] SET 100's index is calculated using the same method as the SET index. This index is market capitalisation-weighted price indexes which compare the current market value of all listed common stocks with its market value on the base date. (see more information about the calculation methodology and the selection criteria for companies to be in the SET 100's index in Appendix F)

- The third criterion is that all financial data; such as share prices, trading volumes and bid and ask prices, should be available in the SETSMART database cover the period of 100 days; from 21st of April 2008 to 15th of September 2008.

The sample includes all listed companies in the SET 100's index. Seven industry groups are included in the index: Argro and Food Industry, Financials, Industrials, Property and Construction, Resources, Services, and Technology.

Company annual reports, which were used to measure the level of information disclosed, were collected mainly from company websites and the SET website (www.set.or.th). Eighty-four companies' annual reports were downloaded from the companies' websites. However, there were some difficulties in obtaining the annual reports for the remaining 16 companies either because the report was not available on the website or because parts of the report were missing. Annual reports for the remaining 16 companies, particularly those companies without information on their website, were collected directly from the library of the Stock Exchange of Thailand: the Maruey Knowledge and Resource Centre.

One hundred useable annual reports were obtained, representing all the companies included in the SET 100's index. The total value of market capitalisation of the companies in the SET 100's index as the end of the December 2007 was 5.25 trillion baht, while the total value of market capitalisation of all 538 listed companies in the SET was 6.64 trillion baht. Thus, this sample represents 79.1% of the market capitalisation of all listed companies in the SET. Table 7-2, shows the summary of the sample of companies for the period of the study classified by the industry groups.

Table 7-2: Summary of sampled companies according to their industry group

Industry groups	Number of listed companies
- Agro and Food Industry	5
- Financials	19
- Industrials	9
- Property and Construction	27
- Resources	11
- Services	18
- Technology	11
Total	100

The literature shows that previous studies had suffered because of the heterogeneous nature of the sample companies. Difficulties occurred because the financial industry group, such as banking, finance and securities companies, have specific accounting rules (and in some cases are subject to particular disclosure requirements not relevant for other industry groups). This could cause statistical problems, such as high variation in the range level of disclosure by companies from different industry groups. Therefore, the financials industry group, 19 banking, finance and securities companies, was excluded from the sample used in the robustness test. Eighty-one listed companies are therefore left for sensitivity analysis tests.

ii.) **Sample for the analyst rating score instrument (questionnaire survey approach)**

The analyst rating scores from the questionnaire survey instrument are used to check the validity of the two research instruments. For this instrument, the level of private disclosure was obtained by despatching the questionnaire survey to Thai securities analysts and fund managers. The target population for the questionnaire survey comprised the securities analysts and the fund managers whose names were disclosed

on the website of the Securities and Exchange Commission (SEC) of Thailand as the licensed and approved persons on the 31st May 2007. This date has been chosen in order to use the same population as used in the qualitative part. As on the 31st May 2007, the SEC website provided 201 names of the licensed and approved securities analysts from 42 licensed securities companies, and 154 names of the licensed and approved fund manager from 29 licensed fund management companies.

A total of 355 sets of questionnaire survey, along with the covering letters, were sent to the Thai securities analysts and fund managers on October 9th 2008. Each of the securities analysts/fund managers was asked to rate the level of the company's disclosure for only those companies that they are currently following. Eighty-six sets of questionnaire survey returned. The response rate for the first round was 24 per cent. Then, the second round of the questionnaire survey along with a reminder letter was despatched in December 15th 2008 to the remaining sample who did not response for the questionnaire in the first round. For this round, there were 26 further responses which brought the total response rate to 31.5 per cent.

Table 7-3 provides a summary of the data sources for each variable in this study.

Table 7-3: List of type of measurement and data source for each variable

Variables	Data source
Dependent Variable	
Market Liquidity	SETSMART database
Independemt Variables	
Disclosure level	
The level of disclosure: checklist instrument	
Overall disclosure	Company's annual report
Annual report	Company's annual report
Strategic information	Company's annual report
Financial information	Company's annual report
Non-financial information	Company's annual report
Channels of information and investor relations	Company's website
The level of disclosure: questionnaire survey instrument	
Public disclosure	Questionnaire survey
Private disclosure	Questionnaire survey
Auditor	Company's annual report
Analysts Following	The Securities Analysts Association's website
Control Variables	
Share Price	SETSMART database
Return Volatility	SETSMART database
Trade Size	SETSMART database
Trade Frequency	SETSMART database
Company Size	SETSMART database

7.4 Statistical Analysis and Empirical Implement

This study uses linear multiple regression analysis to estimate the relationship between the dependent variable of the market liquidity and the independent variable of the level of disclosure. The main reason for using multiple regression analysis in this study is because the technique allows the researcher to make predictions of the dependent variable based on several independent and control variables in the model. In this study, the dependent variable is the market liquidity and the independent variable is the level of disclosure. In addition to the level of disclosure, an auditor firm size and analysts following were included in the model as an additional independent variable. Moreover, a number of control variables are also included in the model. As previously indicated, these control variables have frequently been used in prior disclosure research studies (Heflin, Shaw & Wild 2001). The analysis of the association between the market liquidity and the level of disclosure is based on Heflin, Shaw and Wild (2001) using the following multiple regression model:

$$LIQ = \alpha_0 + \alpha_1 DQ + \alpha_2 PR + \alpha_3 PRVOL + \alpha_4 TSZ + \alpha_5 TF + \alpha_6 SIZE + \varepsilon$$

where

LIQ	=	Either effective spread, adverse selection spread, or depths
DQ	=	The total disclosure quality score
PR	=	Average share price
PRVOL	=	The standard deviation of daily price
TSZ	=	Average trade size
TF	=	Average daily number of trade
SIZE	=	The natural logarithm of company size

Therefore, the specification for this research becomes:

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Model for benchmark test:

$$SPREAD = \beta_0 + \beta_1 DS + \beta_2 TF + \beta_3 TSZ + \beta_4 SIZE + \beta_5 PR + \beta_6 PRVOL + \varepsilon$$

where

SPREAD	=	The reciprocal of the effective relative bid ask spread
DS	=	The total disclosure score
PR	=	The daily averages of bid and ask prices
PRVOL	=	The standard deviation of daily share price
TSZ	=	The average trade volume per day
TF	=	The average number of transaction trades per day
SIZE	=	The market value of common equity at the end of the company's fiscal period
ε	=	Error term

Other models for additional tests are discussed later in the following Chapter. Table 7-4, presents a summary of hypotheses and statistical techniques used for this study. As can be seen in Table 7-4, all hypotheses, except hypothesis number H5a, are tested using multiple regression analysis.

Table 7-4: Summary of Hypotheses and Statistical Analysis

Hypothesis	Variables	Statistical Test
H1$_a$: *Market liquidity is positively related to the overall disclosure score.*	IV = *Total disclosure score* DV = *Reciprocal effective spread*	*Multiple Regression Analysis*
H1$_b$: *Market liquidity is positively related to the disclosure score from annual report.*	IV = *Annual report score* DV = *Reciprocal effective spread*	*Multiple Regression Analysis*
H1$_c$: *Market liquidity is positively related to the analyst rating score for public disclosure channel.*	IV = *Public disclosure score* DV = *Reciprocal effective spread*	*Multiple Regression Analysis*
H1$_d$: *Market liquidity is positively related to the analyst rating score for private disclosure channel.*	IV = *Private disclosure score* DV = *Reciprocal effective spread*	*Multiple Regression Analysis*
H2$_a$: *The relationship between market liquidity and the disclosure score varies among the detailed sub-categories of the self-constructed disclosure index.*	IV = *Strategic information score, Non-financial information score, Financial information score, and Other channels of information* DV = *Reciprocal effective spread*	*Multiple Regression Analysis*
H2$_b$: *Market liquidity is positively related to the disclosure score from strategy information section of the annual report.*	IV = *Strategic information score* DV = *Reciprocal effective spread*	*Multiple Regression Analysis*

Table 7.4: Continued

Hypothesis	Variables	Statistical Test
H2$_c$: Market liquidity is positively related to the disclosure score from non financial information section of the annual report.	IV = *Non-financial information score* DV = *Reciprocal effective spread*	*Multiple Regression Analysis*
H2$_d$: Market liquidity is positively related to the disclosure score from financial information section of the annual report.	IV = *Financial information score* DV = *Reciprocal effective spread*	*Multiple Regression Analysis*
H2$_e$: Market liquidity is positively related to the disclosure score from channels of information and investor relations section.	IV = *Other channels of information* DV = *Reciprocal effective spread*	*Multiple Regression Analysis*
H3$_a$: The relationship between market liquidity and the analyst rating score varies between the channels of disclosure. *H3$_b$: The private disclosure channel is more likely to have greater effect on market liquidity than the public disclosure channel.*	IV = *Private disclosure score, and Public disclosure score* DV = *Reciprocal effective spread*	*Multiple Regression Analysis*
H4: The level of companies' disclosure is positively related to the size of the audit firm.	IV = *Audit firm size* DV = *Disclosure score*	*Multiple Regression Analysis*
H5$_a$: Companies audited by Big Four audit firms are more likely to have higher market liquidity than companies audited by other audit firms.		*Mann-Whitney Test*
H5$_b$: Market liquidity is positively related to audit firm size.	IV = *Audit firm size* DV = *Reciprocal effective spread*	*Multiple Regression Analysis*
H6: There is a positive relationship between financial analysts following and the level of disclosure.	IV = *Disclosure score* DV = *Number of Analysts following*	*Multiple Regression Analysis*

7.5 Sensitivity Analysis

Sensitivity analysis is a technique used to determine how "sensitive" a model is to change in the value of the parameters of the model: the dependent variable and the independent variables, and to change in the structure of the model under a given set of assumptions. There are several purposes of sensitivity analysis. The first is to help identify the key variables in the model. Another is to investigate the consequences of likely changes in these key variables. Moreover, this analysis allows researchers to assess whether the model is likely to be affected by such changes, and to identify actions that could mitigate possible adverse effects on the model.

Sensitivity analysis is usually performed as a series of tests in which the researcher sets different variable values to see how change in one variable will impact the other variable. By showing how the model behaviour responds to changes in variable values, sensitivity analysis is a useful tool in model building as well as in model evaluation. There are several ways to approach sensitivity analysis. The most common approach is to change the initial data and solve the model again to see what the results are stable.

In this study six additional sensitivity analysis tests are applied in order to check the robustness of the regression models. These additional tests involve changing dependent variable (market liquidity), changing the disclosure score variable, changing the measure of the analysts following, deleting variables where there are problems of multicollinearity, excluding outliers, and removing some of the sample from the model estimation.

7.6 Summary

This chapter describes the development of the research instruments used to measure the level of disclosure. Two approaches are taken: one is the construction of the disclosure index; the other is a questionnaire survey to obtain the opinions of securities analysts and fund managers on the quality of disclosures by the companies

they follow. A linear multiple regression analysis is proposed to estimate the association between the measures of disclosures and the market liquidity of listed companies in the SET 100 Index. In addition, the chapter provided an overview of the strategies adopted to improve validity and reliability of the measurement instruments.

Chapter 8

The quantitative study:
Empirical analysis and discussion

This chapter presents the empirical analysis for the quantitative part of the study. The objective of this study is to examine the relationship between the level of information disclosure and the stock market liquidity, using the effective relative bid ask spread as a proxy for stock market liquidity. This relationship is examined in two different ways. First, in a univariate analysis, the correlation coefficients between the effective relative bid ask spread and the disclosure scores are estimated. Second, a multivariate analysis is performed where the effective relative bid ask spread is regressed on the level of disclosure as well as other control variables.

This chapter divided into four main sections. The first section begins with the descriptive statistics for the unadjusted dependent and independent variables, including the control variables. The second section presents the reliability and the validity tests on the key variables, in particular the disclosure score. The following

section presents the empirical analysis of this study, which divided, into two parts. The first part presents the results for the Pearson correlation coefficients between the regression variables of this study and the second presents the multivariate results obtained using SPSS programme. The next section presents the results from sensitivity analysis tests. A summary of this chapter is contained in the final section.

8.1 Descriptive statistics

Descriptive statistics, the means, standard deviations, and the minimum and maximum values, for dependent variable and the key variable are presented in Tables 8-1 and 8-2 respectively. The sample size is the 100 listed companies in the SET 100 index.

Table 8-1: Summary statistics of dependent variable

| Dependent Variable | Mean | Std. | Min | Percentile | | | Max |
				25%	50%	75%	
Effective spread	0.0199	0.0246	0.01	0.0114	0.0136	0.0173	0.17

Table 8-1 presents descriptive statistics for dependent variable. *Effective spreads* is equal to twice the absolute value of the difference between a transaction price and the midpoint of the bid and ask prices scaled by the midpoint, where the midpoint is the average of bid and ask prices. The Effective spreads has a mean of 0.0199, a median of 0.0136, and ranges from 0.01 to 0.17.

Table 8-2 contains a summary descriptive statistics for each of the key variables, disclosure score and its categories, for the 100 sample companies. *The overall disclosure score* is a percentage measure of an equal weighted average of the four major categories of information types, the strategic information score, non-financial information score, financial information score, and the other channels of information (on a scale from 0.00 to 1.00 with a larger number indicating more information

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disclosure). *The annual report score* is a percentage measure of an equal weighted average of the three major categories of information types, the strategic information score, non-financial information score, and financial information score. *The public disclosure score* and *the private disclosure score* are the level of disclosure scores from the questionnaire survey that are calculated as the average of the ratings for each company's disclosure as evaluated by the security analysts and the fund managers. This ratings range from 1 to 5, with higher values indicting more information disclosure. The disclosure scores from strategy information, non-financial information section, financial information, and channels of information and investor relations categories are calculated by reference to the total of disclosure index of each category of information divided by the total maximum score of each category of information for that company.

The overall disclosure score ranges from 0.17 to 0.80 with a mean score of 0.60 and a median score of 0.62. *The annual report score* ranging from 0.21 to 0.75 with a mean score of 0.54 and a median score of 0.54.

The range of *the public disclosure score* awarded to the sample companies ranges from 2.09 to 4.24 with a mean score of 3.45 and a median score of 3.51. The level of *private disclosure score* is slightly lower. This score ranges from 1.95 to 4.24 with a mean score of 3.21 and a median score of 3.29.

The strategic information score ranges from 0.15 to 0.62 with a median score of 0.38. *The non-financial information score* ranges from 0.16 to 1.00 with a median score of 0.61. *The financial information score* ranges from 0.17 to 0.94 with a median score of 0.67. *The other channels of information* ranges from 0.06 to 1.00, with a median score of 0.88. Of the four major categories of information types, *other channels of information* has the highest mean score, followed by the *financial information score*, the *non-financial information score*, and the *strategic information score* respectively (0.79, 0.65, 0.59, and 0.39).

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Table 8-2: Summary statistics of disclosure score

Variable	n	Mean	Std.	Min	25%	50%	75%	Max
					Percentile			
Overall disclosure score	100	0.60	0.10	0.17	0.55	0.62	0.68	0.80
Annual report score	100	0.54	0.11	0.21	0.49	0.54	0.61	0.75
Public disclosure score	100	3.45	0.58	2.09	3.08	3.51	3.88	4.61
Private disclosure score	100	3.21	0.55	1.95	2.86	3.29	3.57	4.24
Four major categories of information:								
Strategic information score	100	0.39	0.10	0.15	0.33	0.38	0.47	0.62
Non-financial information score	100	0.59	0.17	0.16	0.47	0.61	0.68	1.00
Financial information score	100	0.65	0.16	0.17	0.56	0.67	0.78	0.94
Other channels of information	100	0.79	0.22	0.06	0.69	0.88	0.94	1.00

Notes:

[a] *Overall disclosure score* = weighted averaged of the four major categories of information types (25%, 25%, 25% and 25% respectively)

[b] *Annual report score* = weighted averaged of the *Strategic information score, Non-financial information score* and *Financial information score* (equal weight)

Summary descriptive statistics for the other unadjusted key variables and for the control variables for the sample companies are shown in Tables 8-3, 8-4, and 8-5.

Table 8-3: Summary statistics of key variable: audit firm size

Variable	N
Auditor = 1 (Big Four)	79
Auditor = 0 (Non-Big Four)	21

Table 8-3 presents the summary statistics of the auditor variable for the total sample of 100 companies in the SET 100's index. The *auditor* is measured as an indicator variable that takes the value of one if the company is audited by one of the Big Four audit firms, and zero otherwise. The Big Four audit firms are PricewaterhouseCoopers, Deloitte Touche Tohmatsu, Ernst and Young, and KPMG. The result from the table 8-3 show that there are 79 companies that were audited by a Big Four audit firm, the remaining 21 companies were audited by a Non-Big Four audit firm.

These results show a clear difference between the developed countries, such as UK and US, and the developing countries, such as Thailand. In developed countries, almost all the top listed companies tend to be audited by a Big Four audit firm. For example, Botosan (1997), who examines the effect of disclosure level on the cost of equity capital for the US data set, does not include the audit firm size in her study because only two of her sample companies (from the whole sample of 122 manufacturing companies) are audited by Non-Big Six firms, which means that more than ninety-eight percent of the whole sample audited by Big Six firm. Moreover, for UK example, Oxera (2006) stated that the Big Four audit firms audit all but one of the FTSE 100 companies, and represent 99 percent of audit fees in the FTSE 350.

While in Thailand the results show that only seventy-nine percent of the whole sample are audited by a Big Four audit firm. Therefore, it is a compelling reason for the developing country as Thailand to incorporate an auditor as one of the independent

variables into the framework of this study in order to find out that whether or not this variable effect on the liquidity of the stock.

Table 8-4: Summary statistics of key variable: number of analysts following a company

Variable	Mean	Std.	Min	25%	50%	75%	Max
				Percentile			
Number of analysts following from SAA's website	14.07	7.30	0.00	11.00	15.00	20.00	26.00

Table 8-4 reports the summary statistics for analyst following. *The number of analysts following* a company is derived from the Securities Analysts Association's web site (www.saa-thai.org). *Number of analysts following the sample companies measured from SAA's website* ranges from 0 to 26 with a mean score of 14 and a median score of 15.

Table 8-5 shows the summary statistics of control variables. *Trade frequency* is average number of trades per days, measured as the average number of transaction trades per day over a period of 100 days from 21st of April 2008 to 15th of September 2008. *Trade size* is average trade size, computed as the daily average trade volume over a period of 100 days from 21st of April 2008 to 15th of September 2008. *Company size* (Market value in million Baht) is the market capitalisation of common equity at the end of the company's fiscal period, 31st of December 2007. *Share price* is the daily averages of bid and ask prices, which is computed for each company over a period of 100 days from 21st of April 2008 to 15th of September 2008. *Return volatility* is the standard deviation of daily share price over a period of 100 days from 21st of April 2008 to 15th of September 2008.

Table 8-5: Summary statistics of control variables: trade frequency, trade size, company size, share price, and return volatility

| Variable | Mean | Std. | Min | Percentile | | | Max |
				25%	50%	75%	
Trade frequency (per day)	647.01	740.34	28.70	168.92	374.70	805.19	4,019.92
Trade size ('000 shares)	16,953.21	51,346.52	33.48	869.17	2,663.90	10,295.79	362,941.46
Company size (Million Baht)	28,180.55	67,177.30	299.23	2,938.80	6,472.34	25,519.51	494,209.91
Share price (Baht)	31.61	62.40	0.41	3.86	11.68	24.75	439.28
Return volatility	3.83	7.71	0.05	0.47	1.54	3.34	54.52

Trade frequency ranges from 28 transaction trades per day to 4,019 trades, with a mean of 647 and a median of 374 trades per day. *Trade size* ranges from 33,480 shares to 362.94 million shares with a mean score of 16.95 million shares and a median s of 2.66 million shares. The data also indicate a wide range of *company size* with the market capitalisation of common equity ranging from 299.23 million Baht to 494.2 billion Baht. The mean market value of common equity is 28.18 billion Baht which was four times the median of market value (6.47 billion Baht). *Share price* ranges from 0.41 to 439.28 Baht with a mean of 31.61 Baht and a median of 11.68 Baht. *Return volatility* is the standard deviation of daily share price ranges from 0.05 to 54.52. The mean for the *return volatility* is 3.83 with the median score of 1.54.

The results from table 8-5 clearly show that there is a wide range between the minimum value and the maximum value of each control variable. The results also show that all control variables are highly skewed. Further, the Skewness & Kurtosis normality test, the Kolmogorov-Smirnov Z test, and histograms for each of the control variable indicate

that the distributions are not normal. In order to normalise the distributions, all the control variables were transformed into logarithm.

8.2 Reliability and validity of the disclosure variables

The objective of this section is to measure the reliability and validity for the disclosure scores used in this study. As outlined in the methodology chapter, when using the disclosure index as a research instrument there are two important issues, reliability and validity.

Reliability of the disclosure score

This section reports three different approaches to measuring the inter-rater reliability and the internal consistency of disclosure score. These are:

- The Pearson correlation coefficient between the disclosure scores from the researcher and the the second rater.
- The Cronbach's alpha reliability coefficient between the disclosure scores from the researcher and the second rater.
- The Cohen's Kappa statistic which measures the agreement between the disclosure scores from the researcher and the second rater.

The results and the interpretation of these reliability tests are shown in Table 8-6, 8-7, and 8-8.

Table 8-6: Correlation between the ratings of the researcher and the second rater.

		Rater B
Rater A	Pearson Correlation	.845[**]
	Sig. (2-tailed)	.000
	N	14

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

Table 8-6 reports the Pearson correlation coefficients between two raters, where *Rater A* is the researcher, and *Rater B* is the other rater. The result shows that the correlations coefficient between rater A and rater B are high with a statistically significance at a p-value of 0.000 (two-tailed), demonstrating a high level of inter-rater reliability.

Table 8-7: Cronbach's alpha coefficient between the researcher and the second rater

Variables	Cronbach's Alpha	N of Items
Rater A & Rater B	0.900	2

Table 8-7 reports the Cronbach's alpha reliability coefficient between the disclosure scores of the two raters, *Rater A* being the researcher and *RaterB* the other independent rater. The result indicates that the Cronbach's alpha coefficient between *Rater A* and *Rater B* is very high at the value of 0.9. Again demonstrating high level of inter-rater reliability.

The following table, Table 8-8, reports the measurement of agreement for the researcher and the independent rater using the Cohen's Kappa statistic. The sample for this additional reliability test was chosen from the total sample used in this study. Two listed companies were randomly selected from each industry group, giving a sample used of 14 listed companies drawn from seven industry groups. Ratings were on a nominal scale (ie, "disclose"/ "no disclose") for 108 objects (disclosure items) by two raters: the research and the independent rater. The results from Table 8-8 show that the listed companies (F_4 and F_7) from financial industry group (F group) receive the highest Kappa coefficients which are 0.809 and 0.715 respectively. These results imply that the strength of agreement between the researcher and the independent rater for this industry group is substantial and almost perfect. In contrast, one of the listed company (S_{17}) from service industry group (S group) receive the lowest Kappa coefficient which is 0.534 and another listed company (I_8) from industrials industry group (I group) obtained the Kappa coefficient 0.538, which can interpret that the strength of agreement between two raters for these two listed companies is moderate. For the remainder of listed companies from agro and food, resources, property and construction, and technology industry groups (A, R, P, and T group) the Kappa coefficients show the substantial level of agreement. Therefore, overall the strength of agreement between the researcher and the independent inter rater for this additional reliability test is at the substantial level, and this could be implies that the scoring of this research instrument reliable.

Table 8-8: Measurement of agreement between the researcher and the other rater

Sample Companies	Value	Asymp. Std. Error[a]	Appox. T[b]	Appox. Sig.	N of Valid cases
F_4	.809	.060	8.504	.000	108
F_7	.715	.069	7.589	.000	108
A_3	.636	.071	6.832	.000	108
A_1	.605	.078	6.370	.000	108
R_7	.666	.073	6.985	.000	108
R_4	.657	.068	7.171	.000	108
I_8	.538	.084	5.647	.000	108
I_2	.604	.077	6.462	.000	108
P_{20}	.675	.070	7.244	.000	108
P_{14}	.644	.073	6.756	.000	108
T_2	.593	.077	6.521	.000	108
T_5	.638	.075	6.658	.000	108
S_7	.576	.074	6.307	.000	108
S_{17}	.534	.072	6.145	.000	108

Note:

   a. Not assuming the null hypothesis.

   b. Using the asymptotic standard error assuming the null hypothesis.

   c. " F "   represents the sample from financials industry group.

       " A "   represents the sample from agro and food industry group.

       " R "   represents the sample from resources industry group.

       " I "   represents the sample from industrials industry group.

       " P "   represents the sample from property and construction industry group.

       " T "   represents the sample from technology industry group.

       " S "   represents the sample from services industry group.

Validity of the disclosure scores

This section presents two different approaches to measuring the validity of the disclosure scores used in this study. These are:

- The Pearson correlation coefficient between disclosure scores.
- The Cronbach's alpha reliability coefficient between disclosure items.

The results and the interpretation of the validity tests are shown in Table 8-9, 8-10 and 8-11 as follow.

The Pearson correlation coefficients between the disclosure scores as measured by two different research instruments, i.e. the disclosure score from disclosure index and the disclosure score from the ratings of disclosure by analysts and fund managers. In this study, each disclosure score is measured in a different way. The measures have different scaling properties. The disclosure score from the disclosure index is measured on a scale from 0.00 to 1.00 with a larger number indicating more information disclosure; this variable is classified as continuous variable. While the second research instrument is the disclosure scores from the analysts rating which is measured on a Likert scale from 1 to 5 with a larger number indicating more information disclosure. This variable is likely to be classified as interval scale[17] because it is measured on the Likert scale ratings of a number of raters. Because of the measurement problem, the disclosure scores are needed to convert their scales into a common measurement scale so that these disclosure score variables can be compared.

According to de Vaus (2009) there are two possible solutions to the problem of comparing scores on different variables: (i) standardising the variables and expressed the scores as standard deviation units (Z-scores), and (ii) converting each scale into the same lower and upper levels.

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[17] According to Carifio and Perla (2008, p.1151) Likert scales should be analysed as the interval data. Thus, as the intervalists contend, it is perfectly appropriate to summarise the rating measured from Likert scales using means and standard deviations. Moreover, it is appropriate to use parametric statistic techniques when analyse rating from Likert scale.

For the first solution, standardise variables in terms of standard deviation (Z-score), is appropriate for the interval and continuous variables. As stated above, the disclosure scores from both two research instruments are classified as continuous variable. Therefore, to achieve the problem of comparing different variables, the disclosure scores from two different research instruments were transformed into Z-scores[18].

Table 8-9: Correlation coefficient between disclosure score: Z-score approach

		Analysts rating instrument	
		Public (Z-score)	*Private (Z-score)*
Disclosure index instrument	*Annual (Z-score)*	.403**	
	Other (Z-score)		.378**

** Correlation is significant at the 0.01 level

Notes:
a   Significance levels quoted above are for a two-tail test of statistical significance.
b   The number of observations used in the correlation analysis is 100.

Table 8-9 reports the Pearson correlation coefficients between the disclosure scores as measured by the disclosure index and the ratings of disclosure by analysts and fund managers, which were transformed into Z-scores. The result of the validity test for the disclosure score was divided into two sets. The first set was computed with the standardise data for the annual report disclosure score (Z-score annual), and the public disclosure score (Z-score public), while the second set was computed with the standardise data for the other channels of information disclosure score (Z-score web), and the private disclosure score (Z-score). The results indicate the positive correlation between these two research instrument with the correlations coefficient values r=0.403 and r=0.378 respectively.

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[18] To convert variables in terms of the number of standard deviation, a score on variable is standardised (Z_i) by subtracting the mean for ($\overline{X}$) the variable from an individual's score on the variable (x_i) and then dividing the result by the standard deviation for the variable:

$$Z_i = \frac{\left(x_i - \overline{X}\right)}{s}$$ A standardised variable will always have a mean of 0 and a standard deviation of 1.

Table 8-10: Correlation coefficient between disclosure score: convert the scale approach

		Analysts rating instrument	
		Public	*Private*
Disclosure index instrument	*Annual (Adjusted-score)*	.467[**]	
	Other (Adjusted-score)		.378[**]

** Correlation is significant at the 0.01 level

Notes:
[a] Significance levels quoted above are for a two-tail test of statistical significance.
[b] The number of observations used in the correlation analysis is 100.

The disclosure scores were also converted each scale into the same lower and upper level[19], which range of 1 to 5. Table 8-10 reports the result of the Pearson correlation for the converting of the disclosure scores, which also divided into two sets. The first set was computed with the adjusted data for the annual report disclosure score (from disclosure index instrument), and the public disclosure score (from analysts rating instrument), while the second set was computed with the adjusted data for the other channels of information disclosure score (from disclosure index instrument), and the private disclosure score (from analysts rating instrument). The results indicate the positive correlation between these two research instrument with the correlations coefficient values r=0.467 and r=0.378 respectively.

Table 8-11: Cronbach's alpha coefficient between disclosure items

Variables	**Cronbach's Alpha**	**N of Items**
Disclosure index instrument	.745	4

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[19] To convert variables to have the same lower and upper limits, the conversion is using the

formula: $Y = \left(\dfrac{X - X_{min}}{X_{range}} \right) n$ where Y is the adjusted variable, X is the original variable,

X_{min} is the minimum observed value on the original variable and X_{range} is the difference between the maximum observed score and the minimum observed score on the original variable and n is the upper limit of the rescaled variable.

Table 8-11 reports the test for validity of the disclosure score by using the Cronbach's alpha coefficient between the disclosure scores. The results indicate that the Cronbach's alpha coefficient for the four sections of disclosure items turns out to be high at the value of .745.

8.3 Empirical analysis

The empirical analysis designed to answer the hypotheses posited in Chapter 6. The analysis is divided into two parts as follows.

Correlation results

- Correlations between disclosure score variables and control variables

- Correlations between the effective relative bid ask spread and the disclosure score variables and the control variables

Hypothesis testing

- Hypothesis 1: Market liquidity and information disclosure

- Hypothesis 2: Market liquidity and categories of information disclosure

- Hypothesis 3: Market liquidity and channels of information disclosure

- Hypothesis 4: The size of audit firm and information disclosure

- Hypothesis 5: Market liquidity and the size of audit firm

- Hypothesis 6: Analysts following and information disclosure

The correlation results and the results for each hypothesis testing are listed as follows.

Correlation results

Correlations between disclosure score variables and control variables

Table 8-12 shows the Pearson correlations coefficients among the disclosure variables and control variables used in the regression estimations. For disclosure variables, the eight disclosure categories are positively correlated with each other, and correlation coefficients, ranging from $r = 0.237$ to $r = 0.970$, are statistical significant at the 5 percent level or better. The highest correlation among disclosure categories variables is between the public and the private disclosure scores from the analyst ratings ($r = 0.970$). The overall disclosure score shows high correlations with the annual report score, the disclosure score from strategy information section, and the disclosure score from non financial information section ($r = 0.839$, 0.684, and 0.658 respectively). The annual report score also is highly correlated with the disclosure scores from non financial information section, the strategy information section, and the financial information section ($r = 0.768$, 0.716, and 0.697 respectively). Lang and Lundholm (1996) suggest that different categories may capture different aspects of disclosure when disclosure categories have correlations that are considerably less than one.

The correlation coefficients among the control variables range from 0.076 to 0.923, and are significant at the 5 percent level or better. Share price and return volatility show the highest correlation among the control variables ($r = 0.923$). Trade frequency is also highly correlated with trade size ($r = 0.748$). To address the problem of multicollinearity, various combinations of control variables were tested so that highly correlated variables were not included in the same model. The models using variables with the highest explanatory power are reported in sensitivity analysis section.

Table 8-12: Correlations between disclosure score variables and control variables

	Diclosure variables								Control variables					
	Overall	Annual	Public disc.	Private disc.	Strategic info.	Non-financial info.	Financial info.	Other channels	Trade frequency	Trade size	Company size	Share price	Return volatility	Auditor
Disclosure variables:														
Annual report score	.839**													
Public disclosure score	.403**	.267**												
Private disclosure score	.390**	.237*	.970**											
Strategic information	.684**	.716**	.383**	.343**										
Non-financial information	.658**	.768**	.356**	.333**	.454**									
Financial information	.521**	.697**	-.089	-.099	.304**	.162								
Other channels of information	.640**	.120	.358**	.378**	.238*	.116	-.034							
Control Variables:														
Trade frequency	-.004	.043	.141	.134	.015	.106	-.037	-.067						
Trade size	-.193	-.087	-.303**	-.269**	-.113	-.087	-.009	-.230*	.748**					
Company size	.248*	.205*	.742**	.670**	.289**	.358**	-.156	.164	.389**	-.030				
Share price	.326**	.226*	.730**	.666**	.256*	.301**	-.034	.275**	.076	-.559**	.658**			
Return volatility	.249*	.155	.582**	.529**	.173	.204*	-.018	.235*	.200*	-.429**	.511**	.923**		
Auditor	.162	.225*	.221*	.262**	.222*	.125	.171	-.022	-.136	-.125	.104	.059	-.059	
No. of analysts following	.330**	.211*	.810**	.786**	.294**	.307**	-.093	.305**	.089	-.260**	.600**	.551**	.432**	.183

* Correlation is significant at the 0.05 level, and ** Correlation is significant at the 0.01 level

Table 8-13: Correlations between the dependent effective spread variable and independent variables and control variables

	Dependent variable
	Reciprocal effective relative bid ask spread
Panel A: Disclosure variables:	
Overall disclosure score	.325**
Annual report score	.279**
Public disclosure score	.445**
Private disclosure score	.382**
Strategic information	.310**
Non-financial information	.277**
Financial information	.061
Other channels of information	.199*
Panel B: Control variables:	
Trade frequency	-.284**
Trade size	-.525**
Company size	.403**
Share price	.438**
Return volatility	.230*
Auditor	.210*
No. of analysts following	.447**

* Correlation is significant at the 0.05 level, and

** Correlation is significant at the 0.01 level

Correlations between the effective relative bid ask spread and disclosure score variables and control variables

Table 8-13 presents the Pearson correlations coefficients among the dependent variable, independent variables, and control variables. Panel A shows the correlations of primary interest in this study, the relations between the market liquidity and the disclosure variables. The associations are consistent across almost all disclosure categories. Seven of the eight correlation coefficients of disclosure categories are significant at 0.05 level or better. The public disclosure score has the strongest relationship with the reciprocal effective relative bid ask spread (r=0.445). The private disclosure score and overall

disclosure score are also indicate highly correlated with the dependent variable (r=0.382, and 0.325 respectively). This implies that the more the company discloses information, the smaller the different between bid and ask prices. Based on these results, the correlation coefficients provide preliminary evidence in support the research hypothesis.

Table 8-13, Panel B shows the correlation coefficients between the dependent variable and the control variables. The reciprocal effective relative bid ask spread is most closely associated with trade size (r=-0.525). As expected, of the size of the analysts following, company size, and audit firm size are positively, and significantly, correlated with the dependent variable (r= 0.447, 0.403, and 0.210 respectively). Somewhat surprisingly, there are significant negative correlated between trade size, trade frequency and the dependent variable (r=-0.525, and -0.284 respectively). Moreover, the correlation between the dependent variable and share price, return volatility also reveal inversely predicted sign (r=0.438, and 0.230 respectively). However, the unexpected sign for these correlations may be due to the high correlations, multicollinearity problem, among the control variables as discussed previously.

Hypothesis testing

The hypotheses were tested using multivariate regression analysis. The results for each of the hypotheses are presented in this section.

Hypothesis 1: Market liquidity and information disclosures

The first hypothesis concerns the impact of the level of information disclosure on the liquidity of shares traded on the Stock Exchange of Thailand. This hypothesis was divided into four sub-hypotheses as follows:

H1$_a$: *Market liquidity is positively related to the overall disclosure score.*

H1$_b$: *Market liquidity is positively related to the disclosure score from annual report.*

H1$_c$: *Market liquidity is positively related to the analyst rating score for the public disclosure channel.*

H1$_d$: *Market liquidity is positively related to the analyst rating score for the private disclosure channel.*

The above hypotheses are tested using the following model.

$$SPREAD = \beta_0 + \beta_1 DS + \beta_2 TF + \beta_3 TSZ + \beta_4 SIZE + \beta_5 PR + \beta_6 PRVOL + \varepsilon \quad \text{Eq. (1)}$$

where *SPREAD* is the reciprocal of the effective relative bid-ask spread, *DS* is variously the overall disclosure score, the annual report score, public disclosure score, or private disclosure score, *TF* is the average number of transaction trades per day, *TSZ* is the daily average trade volume, *SIZE* is the market value of common equity, *PR* is the daily averages of bid and ask prices, and *PRVOL* is the standard deviation of daily share price.

The relation between the level of disclosure and the market liquidity, as measured by the effective relative bid ask spread, and the level of disclosure score is predicted to be negative. This is consistent with prior research (Lang & Lundholm, 1993, 1996; Welker, 1995; Heflin, Shaw & Wild, 2001). In the same way, the average number of transaction trades per day, and share price are also expected to be negative in their effect on the effective relative bid-ask spread. While, the daily average trade size, and the standard deviation of daily share price are expected to have a positive effect in the effective relative bid-ask spread. As the effective relative bid ask spread was transformed into the reciprocal form, the predicted signs for all independent variables were estimated to be the reverse from that described above. Most important, coefficient for the level of disclosure score is predicted to be positive in the reciprocal effective relative bid-ask spread regression.

Table 8-14 presents the results of estimating equation (1), Models (1), (2), (3), and (4), for the first hypothesis where the reciprocal of effective relative bid ask spread is the dependent variable and the independent variable is *the overall disclosure score, the annual report score, public disclosure score*, or *private disclosure score* respectively.

The regression results of models (1) - (4) show a good fit for the model. The adjusted R squared (Adj R^2) range from 31.40 to 36.99 percent, which suggest that the effective relative bid ask spread variation is explained by the disclosure scores and control variables. Four out of five coefficients of the control variables are significant with p-values less than 0.1. The coefficients for *trade frequency* and *share price* are positive and significant. Also, consistent with expectations, *return volatility* has a negative coefficient which is significant. The *trade size* coefficient is negative and significant, while *company size* coefficient is positive but not significant.

The coefficients for the disclosure scores, which are, as expected, positive, in models (1), and (2), (0.265 and 0.212) with a t-statistics of 3.05 and 2.49, and significant at the 5 percent level. This findings support the hypothesis *H1$_a$*, and, *H1$_b$* that the market liquidity is positively related to the overall disclosure score, in particular the disclosure score from the annual report. Similar to the results from the disclosure index instruments, the results from models (3), and (4) show that the coefficients of the level of public disclosure channel and the private disclosure channel are, as expected, positive (0.402 and 0.316 respectively) with a t-statistics of 3.87 and 3.15, and significant at the 1 percent level. This finding also indicates the evidence to support hypotheses *H1$_c$* and *H1$_d$*, i.e. that the market liquidity is positively related to both the public disclosure channel and the private disclosure channel.

Table 8-14: Regression of the reciprocal effective relative bid-ask spread on disclosure score and control variables

$$SPREAD = \beta_0 + \beta_1 DS + \beta_2 TF + \beta_3 TSZ + \beta_4 SIZE + \beta_5 PR + \beta_6 PRVOL + \varepsilon \quad \text{Eq. (1)}$$

Variable	Model 1 (Overall)	Model 2 (Annual)	Model 3 (Public)	Model 4 (Private)
Disclosure score	**.265**	**.212**	**.402**	**.316**
	3.05**	*2.49***	*3.87****	*3.15****
Trade frequency	**.320**	**.322**	**.386**	**.376**
	2.63**	*2.60***	*3.23****	*3.07****
Trade size	**-.176**	**-.200**	**-.074**	**-.114**
	-1.85*	*-2.09***	*-.76*	*-1.16*
Company size	**.066**	**.113**	**.042**	**.687**
	.52	*.88*	*.34*	*.54*
Share price	**1.104**	**1.096**	**.780**	**.919**
	2.90***	*2.83****	*2.03***	*2.37***
Return volatility	**-.959**	**-.961**	**-.707**	**-.822**
	-2.56**	*-2.52***	*-1.89**	*-2.17***
N	100	100	100	100
Adjusted R^2	0.3352	0.314	0.3699	0.3389
F	18.21***	8.56***	22.50***	9.46***
Breusch-Pacan	0.51	0.34	3.04*	2.74*
Jarque-Bera	5.099	4.760	10.15[†]	7.867

*, ** and *** indicate significance at p < .1, p < .05, and p < .01 respectively
[†] **indicate JB value higher than 9.21 and reject the null hypothesis of normality at 1 %**

Notes: 1. Coefficient is shown in the upper line (bold line), and the lower line (italic line) shows White's (1980) adjusted *t*-statistics.
   2. Jarque-Bera statistic, the critical value for the null hypothesis of normality distribution is 5.99 at the 5 percent significance level, and 9.21 at the 1 percent significant level.

SPREAD is the reciprocal of the effective relative bid-ask spread, *DS* is variously the disclosure score; overall, annual, public, and private disclosure score, *TF* is the average number of transaction trades per day, *TSZ* is the daily average trade volume, *SIZE* is the market value of common equity, *PR* is the daily averages of bid and ask prices, and *PRVOL* is the standard deviation of daily share price.

Hypothesis 2: Market liquidity and categories of information disclosures

The second hypothesis relates to the affect of the level of information disclosure on the liquidity of shares traded on the Stock Exchange of Thailand. This hypothesis relates to the different section of the annual report and thus is divided into five sub-hypotheses as following,

> $H2_a$: *The relationship between market liquidity and the disclosure score varies among the detailed sub-categories of the self-constructed disclosure index.*

> $H2_b$: *Market liquidity is positively related to the disclosure score from strategy information section of the annual report.*

> $H2_c$: *Market liquidity is positively related to the disclosure score from non financial information section of the annual report.*

> $H2_d$: *Market liquidity is positively related to the disclosure score from financial information section of the annual report.*

> $H2_e$: *Market liquidity is positively related to the disclosure score from channels of information and investor relations section.*

The above hypotheses $H2_a$, $H2_b$, $H2_c$, $H2_d$, **and** $H2_e$ are examined by regressing the previous equation (Eq.1), where *DS* is either disclosure score from all the information sections, from the strategy information section, the non financial information section, the financial information section, or the channels of information and investor relations section respectively. The sign predicted for each independent variable and control variable are as stated above.

Table 8-15 presents the results from multivariate regression analysis for the second hypothesis where the reciprocal of the effective relative bid ask spread is the dependent variable and the independent variable is variously *the disclosure score from all the*

information sections, the disclosure score from the strategy information section, the disclosure score from the non-financial information section, the disclosure score from the financial information section, or *the disclosure score from the channels of information and investor relations section* respectively.

Similar to models (1) – (4), models (5) – (9) show a good fit for the model. The adjusted R squares (Adj R^2) range from 27.55 to 31.36 percent and four of the five coefficients of the control variables are significant with p-values less than 0.1 and are consistent with the results in Table 8-14. The result from model (5) reports that two of the four coefficients on the independent variables, the strategy and the financial sections, are statistical significance at 10 percent level or better with, as predicted a positive sign. The other two coefficient on the independent variables, the non financial and channels of information and the investor relations sections, are positive but not significant at the 10 percent level. This finding supports the hypothesis $H2_a$ that the relation between the market liquidity and the disclosure score among the detailed categories for each information section varies.

Consistent with the results from model (5), the coefficients on the level of disclosure score from the strategy information section and from the financial information section, from models (6) and (8), are 0.231 and 0.193. The coefficients for the disclosure scores from these two sections, which are, as predicted and positive, with t-statistics of 2.69 and 2.18, and significant at less than 5 percent level. Based on these findings, hypothesis $H2_b$ and $H2_d$, i.e. that the market liquidity is positively related to the level of disclosure scores from the strategy information section and from the financial information section, can be accepted. However, the results for models (7) and (9) indicate that the coefficients for the disclosure scores, although positive, are not significant. These findings do not support the hypothesis $H2_c$ and $H2_e$, that there is a relationship between the reciprocal of effective relative bid ask spread and the disclosure scores from non financial information section and from channels of information and investor relations sections.

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Table 8-15: Regression of the reciprocal effective relative bid-ask spread on categories of information disclosure score and control variables

$$SPREAD = \beta_0 + \beta_1 DS + \beta_2 TF + \beta_3 TSZ + \beta_4 SIZE + \beta_5 PR + \beta_6 PRVOL + \varepsilon \quad \text{Eq. (1)}$$

Variable	Model 5 (All Part)	Model 6 (Str)	Model 7 (Non)	Model 8 (Fin)	Model 9 (Other)
Strategic	**.171**	**.231**			
	1.69**	*2.69****			
Non-financial	**.062**		**.082**		
	.069		*.095*		
Financial	**.121**			**.193**	
	1.25*			*2.18***	
Other channels	**.001**				**.100**
	.01				*1.11*
Trade frequency	**.311**	**.311**	**.321**	**.327**	**.323**
	2.51**	*2.53***	*2.57***	*2.57***	*2.55***
Trade size	**-.173**	**-.198**	**-.191**	**-.212**	**-.181**
	-1.74**	*-2.08***	*-1.98**	*-2.16***	*-1.79**
Company size	**.050**	**.74**	**.088**	**.149**	**.112**
	.38	*.57*	*.68*	*1.12*	*.85*
Share price	**1.075**	**1.08**	**1.114**	**1.177**	**1.207**
	2.76**	*2.82****	*2.86****	*2.97****	*3.05****
Return volatility	**-.927**	**-.927**	**-.973**	**-1.02**	**-1.044**
	-2.42**	*-2.44***	*-2.53***	*-2.62****	*-2.68****
N	100	100	100	100	100
Adjusted R^2	0.3136	0.321	0.3042	0.2755	0.278
F	6.03***	8.81***	8.21***	7.28***	7.35***
Breusch-Pacan	0.96	1.31	0.26	0.58	0.65
Jarque-Bera	2.47	4.649	4.15	2.588	3.109

*, ** and *** indicate significance at p < .1, p < .05, and p < .01 respectively
[†] indicate JB value higher than 9.21 and reject the null hypothesis of normality at 1 %

Notes: 1. Coefficient is shown in the upper line (bold line), and the lower line (italic line) shows White's (1980) adjusted *t*-statistics.
2. Jarque-Bera statistic, the critical value for the null hypothesis of normality distribution is 5.99 at the 5 percent significance level, and 9.21 at the 1 percent significant level.

SPREAD is the reciprocal of the effective relative bid-ask spread, *DS* is variously the disclosure score; strategic, non-financial, financial, and other disclosure score, *TF* is the average number of transaction trades per day, *TSZ* is the daily average trade volume, *SIZE* is the market value of common equity, *PR* is the daily averages of bid and ask prices, and *PRVOL* is the standard deviation of daily share price.

Hypothesis 3: Market liquidity and channels of information disclosure

The third hypothesis concerns the impact of the analysts rating score on the liquidity of shares traded on the Stock Exchange of Thailand. This hypothesis is divided into two sub-hypotheses as follows:

> **H3$_a$:** *The relationship between market liquidity and the analyst rating score varies between the channels of disclosure.*

> **H3$_b$:** *The private disclosure channel is more likely to have greater effect on market liquidity than the public disclosure channel.*

The above hypothesis **H3$_a$** is examined by regressing equation (1) where *DS* is either *public disclosure*, or *private disclosure* respectively. The hypothesis **H3$_b$** is added two more variables (*public disclosure* and *private disclosure*) to equation (1) instead of *DS*, while the dependent variable and control variables are the same as the previous equation. The second regression equation is as follows:

$$SPREAD = \beta_0 + \beta_1 DPUB + \beta_2 DPRI + \beta_3 TF + \beta_4 TSZ + \beta_5 SIZE + \beta_6 PR + \beta_7 PRVOL + \varepsilon \qquad \text{Eq. (2)}$$

where dependent variable and control variables are as previously defined. *DPUB* is disclosure score of the listed company via the public channel as evaluated by the financial intermediaries who are following that company, and *DPRI* is disclosure score of the listed company via the private channel.

Table 8-16 presents the results from multivariate regression analysis for the third hypothesis when the independent variable is either *public disclosure score*, or *private disclosure score* respectively. Model (10) presents the results of estimating equation (2) when both the public disclosure score and private disclosure score are included in the same model. The adjusted R^2 for the regression is 38.25 percent. Two of the five coefficients on control variables are significant with p-values less than 0.1. The coefficients on *trade frequency* and *share price* are positive, and significant. The *trade size* and *return volatility* have negatively coefficient, while the *company size* has positively coefficient but insignificant.

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Table 8-16: Regression of the reciprocal effective relative bid-ask spread on public, private disclosure score and control variables

$$SPREAD = \beta_0 + \beta_1 DPUB + \beta_2 DPRI + \beta_3 TF + \beta_4 TSZ + \beta_5 SIZE + \beta_6 PR + \beta_7 PRVOL + \varepsilon \qquad \text{Eq. (2)}$$

Variable	Model 10 (Public & Private)
Public dis. score	**.988**
	2.75***
Private dis. score	**-.578**
	-1.70*
Trade frequency	**.381**
	3.22***
Trade size	**-.051**
	-.52
Company size	**.027**
	.22
Share price	**.678**
	1.76*
Return volatility	**-.616**
	-1.65
N	100
Adjusted R^2	0.3825
F	22.27***
Breusch-Pacan	2.02
Jarque-Bera	12.372[†]

*, ** and *** indicate significance at p < .1, p < .05, and p < .01 respectively
[†] **indicate JB value higher than 9.21 and reject the null hypothesis of normality at 1 %**

Notes: 1. Coefficient is shown in the upper line (bold line), and the lower line (italic line) shows White's (1980) adjusted *t*-statistics.
2. Jarque-Bera statistic, the critical value for the null hypothesis of normality distribution is 5.99 at the 5 percent significance level, and 9.21 at the 1 percent significant level.

SPREAD is the reciprocal of the effective relative bid-ask spread, *PUB* is public disclosure score, *PRI* is private disclosure score, *TF* is the average number of transaction trades per day, *TSZ* is the daily average trade volume, *SIZE* is the market value of common equity, *PR* is the daily averages of bid and ask prices, and *PRVOL* is the standard deviation of daily share price.

The result from model (10) shows that both of the coefficients on public disclosure score and private disclosure score are statistically significance at the 10 percent level and better. The coefficient on each independent variable in this model and its level of significant can be interpreted as follows. First there is the coefficient for the public disclosure score. Here the coefficient is positive (0.988) with a t-statistic of 2.75 and significant with a p-value of less than 0.01, which is as expected. This result implies that when a company discloses more information via the public disclosure channels, the market liquidity of that company's shares increases. Second there is the coefficient for the private disclosure score. This coefficient is negative (-0.578) with a t-statistic of 1.70 and significant with a p-value of less than 0.1. This implies that the more the company discloses information via the private disclosure channels, the wider bid and ask spread of that company shares and hence the lower the market liquidity.

As can be seen from Table 8-12, there is a multicollinearity problem between independent variables; public disclosure score and private disclosure score. Even though the assumptions of multiple regression analysis indicate that independent variables should not be highly inter-correlated (the assumption of the absence of multicollinearity), the intention of the third hypothesis of this study is to compare the effect of public disclosure and private disclosure channels on the stock market liquidity. In order to achieve the third hypothesis, therefore, both public disclosure and private disclosure channels were included in the same model. Nevertheless, it should be noted that an unexpected sign may be caused from this high correlation between these independent variables. However, when one of the independent variables is excluded from the model (as show in Table 8-14, models (3) and (4)), the coefficient for both the public and private disclosure score are as expected, and significant with p-values less than 0.01.

Overall, the findings from models (3), (4), and (10) support the alternative hypothesis *H3$_a$* that the relationship between the market liquidity and the analysts rating of disclosure varies between the channels of disclosure. However, hypothesis *H3$_b$* cannot be accepted as the coefficient on the public disclosure (coefficient = 0.988) is higher than the coefficient on the private disclosure (coefficient = -0.578) which means that in model (10) the public disclosure has more effect on the dependent variable than private

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disclosure. In other words, for these data, public disclosure channel is more likely to have higher effect on market liquidity than private disclosure channel.

Hypothesis 4: The size of audit firm and information disclosures

The fourth hypothesis concerns the association between the level of company disclosure and the size of the audit firm.

> *H4: The level of companies' disclosure is positively related to the size of the audit firm.*

The above hypothesis *H4* is examined by estimating a regression model where the disclosure score is the dependent variable, a proxy for the size of audit firm is independent variable, and the logarithms of the average number of transaction trades per day, the daily average trade volume, the market value of common equity the daily averages of bid and ask prices, and the standard deviation of daily share price are control variables. Thus, the third regression equation is as follows:

$$DS = \beta_0 + \beta_1 AUD + \beta_2 TF + \beta_3 TSZ + \beta_4 SIZE + \beta_5 PR + \beta_6 PRVOL + \varepsilon \quad \text{Eq. (3)}$$

where *DS* is various by the overall disclosure score, the annual report score, the disclosure score from strategy information section, the disclosure score from non financial information section, the disclosure score from financial information section, the disclosure score from channels of information and investor relations section, public disclosure score, or private disclosure score respectively. All control variables are as defined previously, and *AUD* denotes the auditor firm size.

The relationship between the level and the size of audit firm is predicted to be positive. This is consistent with the previous research (Singhvi & Desai, 1971; Welker, 1995; Wallace, Naser & Mora, 1994; Wallace & Naser, 1995). The expected sign predicted for each control variable is the same as discussed previously.

Table 8-17 presents the results from multivariate regression analysis for the fourth hypothesis when the dependent variable is the disclosure score, and independent variable is the audit firm size. In models (11), (12), (13), (15), (17), and (18), the independent variable is audit firm size and the dependent variable is variously the disclosure score from the overall, the annual report, the disclosure score from strategy information section, the disclosure score from financial information section, the public disclosure score, or the private disclosure score respectively.

The adjusted R^2 for each regression model are low except the public disclosure score and the private disclosure score models. The adjusted R^2 for the public disclosure score is 42.90 percent and for the private disclosure score is 38.30 percent. These suggest that 42.90 percent (38.30 percent) of the public disclosure score (the private disclosure score) is explained by the audit firm size and control variables. Consistent with expectations, the audit firm size from models (11), (12), (13), (15), (17), and (18), indicate positively coefficient and statistically significant with p-values less that 0.1 on the level of disclosure regressions model. Model (11), where the overall disclosure score is dependent variable, shows that the coefficient on the audit firm size is 0.188 with a t-statistic of 1.84. Model (12), the disclosure score from the annual report, reports that the coefficient on the audit firm size is 0.243 with a t-statistic of 2.32. The coefficient on the audit firm size for model (13) is 0.250 and model (15) is 0.182 with a t-statistic of 2.44 and 1.70 respectively. The results from the public disclosure score model (model 17) and the private disclosure score model (model 18) show that the coefficient on the audit firm size is 0.245 and 0.302 (with a t-statistic of 3.04 and 3.6 respectively).

Models (14), and (16) present the results of estimating equation (3) where the independent variable is the audit firm size and the dependent variable is variously the disclosure score from non financial information section, and the disclosure score from channels of information and investor relations section respectively. The adjusted R^2 for each regression model are very low. The results from models (11) and (14) indicate the positive, but not significant, relationship between the level of disclosure and the audit firm size. The coefficient on the audit firm size for model (14) is 0.151, and model (16) is 0.001, both of them behave as expected (with a t-statistic of 1.47, and 0.01 respectively).

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Overall, the results are as expected. On the basis of these findings from models (14) and (16), which show there is no evidence support the hypothesis that audit firm size has an effect on the disclosure score from non financial information section and the disclosure score from the channels of information and investor relations section. However, the results from models (11), (12), (13), (15), (17) and (18) indicate significant relationship between the audit firm size and the level of the overall disclosure score, the disclosure score from annual report, the disclosure score from strategy information section, the disclosure score from financial information section, the public disclosure score, and the private disclosure score. These results suggest that the audit firm size has an effect on the level of the company's disclosure. In particular, audit firm size is related to information disclosure in the annual report, strategy section, financial section, public and private channels. This implies that companies audited by one of the large audit firms have greater voluntary disclosure in certain areas than companies audited by smaller audit firms.

Table 8-17: Regression of disclosure score on audit firm size and control variables

$$DS = \beta_0 + \beta_1 AUD + \beta_2 TF + \beta_3 TSZ + \beta_4 SIZE + \beta_5 PR + \beta_6 PRVOL + \varepsilon \qquad \text{Eq. (3)}$$

Variable	Model 11 (Overall)	Model 12 (Annual)	Model 13 (Str)	Model 14 (Non)	Model 15 (Fin)	Model 16 (Other)	Model 17 (Public)	Model 18 (Private)
Trade frequency	**-.014**	**-.011**	**-.055**	**-.022**	**.031**	**-.010**	**.154**	**.165**
	-.10	*-.08*	*-.39*	*-.16*	*.21*	*-.07*	*1.37*	*1.41*
Trade size	**-.177**	**-.034**	**-.041**	**-.086**	**.043**	**-.274**	**-.329**	**-.292**
	-1.59	*-.31*	*-.37*	*-.78*	*.38*	*-2.44***	*-3.77****	*-3.22****
Company size	**.217**	**.150**	**.314**	**.260**	**-.179**	**.183**	**.287**	**.279**
	1.43	*.98*	*2.07***	*1.71**	*-1.13*	*1.19*	*2.41***	*2.25***
Share price	**.021**	**.133**	**.128**	**.202**	**-.023**	**-.149**	**.704**	**.467**
	.05	*.28*	*.28*	*.43*	*-.05*	*-.32*	*1.92**	*1.22*
Return volatility	**.050**	**-.040**	**-.149**	**-.115**	**.121**	**.149**	**-.514**	**-.301**
	.11	*-.09*	*-.33*	*-.25*	*.25*	*.32*	*-1.43*	*.081*
Auditor	**.188**	**.243**	**.250**	**.151**	**.182**	**.001**	**.245**	**.302**
	1.84*	*2.32***	*2.44***	*1.47*	*1.7**	*.01*	*3.04****	*3.60****

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Table 8.17: continued

Variable	Model 11 (Overall)	Model 12 (Annual)	Model 13 (Str)	Model 14 (Non)	Model 15 (Fin)	Model 16 (Other)	Model 17 (Public)	Model 18 (Private)
N	100	100	100	100	100	100	100	100
Adjusted R^2	0.054	0.043	0.076	0.072	0.011	0.056	0.429	0.383
F	2.40**	1.73	2.36**	2.29**	0.81	1.98**	13.41***	11.25***
Breusch-Pacan	0.75	0.01	3.16	0.07	0.48	2.81*	2.05	3.32*
Jarque-Bera	1.908	6.444	1.122	.1531	5.749	26.84†	3.633	1.618

*, ** and *** indicate significance at p < .1, p < .05, and p < .01 respectively
† **indicate JB value higher than 9.21 and reject the null hypothesis of normality at 1 %**

Notes: 1. Coefficient is shown in the upper line (bold line), and the lower line (italic line) shows White's (1980) adjusted *t*-statistics.
2. Jarque-Bera statistic, the critical value for the null hypothesis of normality distribution is 5.99 at the 5 percent significance level, and 9.21 at the 1 percent significant level.

DS is variously the disclosure score; overall, annual, public, private, strategic, non-financial, financial, and other disclosure score, *AUD* is auditor, *TF* is the average number of transaction trades per day, *TSZ* is the daily average trade volume, *SIZE* is the market value of common equity, *PR* is the daily averages of bid and ask prices, and *PRVOL* is the standard deviation of daily share price.

Hypothesis 5: Market liquidity and audit firm size

The fifth hypothesis relates to the effect of audit firm size on the liquidity of shares traded on the Stock Exchange of Thailand. This hypothesis is divided into two sub-hypotheses as follows:

> $H5_a$: *Companies audited by Big Four audit firms are more likely to have higher market liquidity than companies audited by other audit firms.*

> $H5_b$: *Market liquidity is positively related to audit firm size.*

Table 8-18 and 8-19 show the results of the Mann-Whitney test which is employed to measure the difference between companies audited by Big Four audit firms and by Non-Big Four audit firms in order to test hypothesis $H5_a$. Another hypothesis $H5_b$ is examined by Multivariate regression analysis, which will discuss later.

Table 8-18: The mean rank of the effective relative bid ask spread between Big Four and Non-Big Four

<table>
<tr><td colspan="5" align="center">Ranks</td></tr>
<tr><td></td><td>auditor</td><td>N</td><td>Mean Rank</td><td>Sum of Ranks</td></tr>
<tr><td>Effective spread</td><td>Non-Big Four</td><td>21</td><td>60.19</td><td>1264.00</td></tr>
<tr><td></td><td>Big Four</td><td>79</td><td>47.92</td><td>3786.00</td></tr>
<tr><td></td><td>Total</td><td>100</td><td></td><td></td></tr>
</table>

Table 8-18 shows the mean rank of the effective relative bid ask spread obtained for the listed companies that audited by Big Four audit firms and Non-Big Four audit firms. The mean rank of the effective relative bid ask spread obtained for the listed companies that audited by Big Four audit firms (mean rank = 47.92) is considerably less than that of the effective relative bid ask spread obtained for the listed companies that audited by Non-Big Four audit firms (mean rank = 60.19). These results could imply that listed companies audited by Big Four audit firms have smaller effective relative bid ask spread than listed companies audited by Non-Big Four audit firms. This means that listed companies that audited by Big Four audit firms are more likely to have higher market

liquidity than the listed companies audited by other audit firms. However, the hypothesis cannot be accepted on the basis of only the mean rank score.

The Mann-Whitney test was employed in order to examine whether there is a different of effective relative bid ask spread between these two groups is significant. The whole sample was divided into two groups, depending on whether the listed company was audited by one of the Big Four audit firms or was audited by another audit firms. The result of the Mann-Whitney test is as follows.

Table 8-19: Mann-Whitney test for the audit firm size and effective relative bid ask spread

Test Statistics[a]

	Effective spread
Mann-Whitney U	626.000
Wilcoxon W	3786.000
Z	-1.722
Asymp. Sig. (2-tailed)	.085
Exact Sig. (2-tailed)	.086
Exact Sig. (1-tailed)	.043
Point Probability	.001

a. Grouping Variable: auditor

As shown by the results from Mann-Whitney test, Table 8-19, there is no statistically significant difference in the effective relative bid ask spread between the listed companies that audited by Big Four audit firms and the listed companies that audited by Non-Big Four audit firms. Consequently, the above results do not support hypothesis *H5$_a$*.

Hypothesis *H5_b* is examined by adding one more variable (*Audit firm size*) to equation (1), while the dependent variable and control variables are the same as the previous equation. The fourth regression equation is as follows:

$$SPEARD = \beta_0 + \beta_1 DS + \beta_2 AUD + \beta_3 TF + \beta_4 TSZ + \beta_5 SIZE + \beta_6 PR + \beta_7 PRVOL + \varepsilon$$

Eq. (4)

where dependent variable, independent variables, and control variables are as previously defined.

Table 8-20 presents the results from multivariate regression analysis for *H5_b* hypothesis. Models (19) – (27) present the results of estimating equation (4) where the reciprocal of effective relative bid ask spread is the dependent variable and the independent variables are audit firm size, and either the overall disclosure score, the annual report score, the disclosure score from strategy information section, the disclosure score from non financial information section, the disclosure score form financial information section, the disclosure score from channels of information and investor relations section, public disclosure score, or private disclosure score respectively.

The regression results reveal good fit for the model. The adjusted R squared (Adj R^2) ranges from 27.70 percent to 36.30 percent. Five of the seven coefficients are significant with p-values less than 0.1. The coefficients on *trade frequency* and *share price* are positive and significant. Also consistent with expectations, *return volatility* has a significant negative coefficient. The *trade size* coefficient is negative and significant, while the *Company size* coefficient is positive but not significant. The coefficient on the level of disclosure score from models (20), (21), (22), (23), (24), (25) and (26) are statistically significant and behave as expected (with a t-statistic of 2.41, 2.25, 3.62, 2.86, 2.44, 2.01 and 0.77 respectively), which is positively related to the reciprocal of effective relative bid ask spread and significant at less than the 10 percent level. While only the coefficient on the level of disclosure score from model (27) that is not significant at the 10 percent level. The coefficient on the audit firm size from all models (models (19) – (27)) are not significant at the 10 percent level, however this variable has a positive coefficient as predicted. Based on this finding, hypothesis *H5_a* cannot be accepted.

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Table 8-20: Regression of the reciprocal effective relative bid-ask spread on disclosure score, audit firm size and control variables

$$SPREAD = \beta_0 + \beta_1 DS + \beta_2 AUD + \beta_3 TF + \beta_4 TSZ + \beta_5 SIZE + \beta_6 PR + \beta_7 PRVOL + \varepsilon \qquad \text{Eq. (4)}$$

Variable	Model 19 (Without disc)	Model 20 (Overall)	Model 21 (Annual)	Model 22 (Public)	Model 23 (Private)	Model 24 (Str)	Model 25 (Non)	Model 26 (Fin)	Model 27 (Other)
Disclosure score		**.215**	**.197**	**.396**	**.308**	**.217**	**.181**	**.067**	**.1003**
		2.41**	*2.25***	*3.62****	*2.86****	*2.44***	*2.01***	*.77**	*1.11*
Trade frequency	**.324**	**.321**	**.322**	**.385**	**.375**	**.312**	**.320**	**.327**	**.323**
	2.56**	*2.6***	*2.60***	*3.20****	*3.04****	*2.53***	*2.57***	*2.57***	*.256***
Trade size	**-.207**	**-.169**	**-.200**	**-.076**	**-.117**	**-.198**	**-.191**	**-.210**	**-.179**
	-2.11**	*-1.74**	*-2.08***	*-.77*	*-1.17*	*-2.07***	*-1.98**	*-2.14***	*-1.78**
Company size	**.161**	**.115**	**1.32**	**.48**	**.075**	**.093**	**.114**	**.173**	**.143**
	1.21	*.87*	*1.00*	*.37*	*.57*	*.07*	*.86*	*1.28*	*1.06*
Share price	**1.044**	**1.04**	**1.01**	**.765**	**900**	**1.01**	**1.008**	**1.04**	**1.059**
	2.53**	*2.59***	*2.52***	*1.94**	*2.25***	*2.53***	*2.48***	*2.53***	*2.57***
Return volatility	**-.897**	**-.908**	**-.889**	**-.693**	**-.804**	**-.865**	**-.876**	**-.906**	**-.912**
	-2.22**	*-2.31***	*-2.25***	*-1.81**	*-2.06***	*2.20***	*-2.21***	*-2.24***	*-2.26***
Auditor	**.113**	**.072**	**.065**	**.0158**	**.0197**	**.058**	**.85**	**.102**	**.113**
	1.25	*.81*	*.71*	*.18*	*.21*	*.64*	*.95*	*1.11*	*1.25*

Table 8.20 : continued

Variable	Model 19 (Without disc)	Model 20 (Overall)	Model 21 (Annual)	Model 22 (Public)	Model 23 (Private)	Model 24 (Str)	Model 25 (Non)	Model 26 (Fin)	Model 27 (Other)
N	100	100	100	100	100	100	100	100	100
Adjusted R^2	0.280	0.345	0.311	0.363	0.332	0.316	0.281	0.277	0.282
F	7.43***	7.53***	7.37***	9.07***	8.03***	7.56***	7.43***	6.43***	6.56***
Breusch-Pacan	1.39	0.91	0.61	3.09*	2.74*	2.96*	1.39	1.3	1.85
Jarque-Bera	4.550	1.485	1.967	9.789†	7.582	2.996	4.371	3.854	4.145

*, ** and *** indicate significance at p < .1, p < .05, and p < .01 respectively
† indicate JB value higher than 9.21 and reject the null hypothesis of normality at 1 %

Notes: 1. Coefficient is shown in the upper line (bold line), and the lower line (italic line) shows White's (1980) adjusted *t*-statistics.
2. Jarque-Bera statistic, the critical value for the null hypothesis of normality distribution is 5.99 at the 5 percent significance level, and 9.21 at the 1 percent significant level.

SPREAD is the reciprocal of the effective relative bid-ask spread, *DS* is variously the disclosure score; overall, annual, public, private, strategic, non-financial, financial, and other disclosure score, *AUD* is auditor, *TF* is the average number of transaction trades per day, *TSZ* is the daily average trade volume, *SIZE* is the market value of common equity, *PR* is the daily averages of bid and ask prices, and *PRVOL* is the standard deviation of daily share price.

Hypothesis 6: Analysts following and information disclosure

The sixth hypothesis relates to the association between the size of the analyst following and the level of companies' disclosures.

> **H6:** *There is a positive relationship between financial analyst following and the level of disclosure.*

The above hypothesis **H6** is examined by estimating a regression model where the number of analysts following the company is the dependent variable, and the disclosure score is independent variable. Measures of the average number of transaction trades per day, the daily average trade volume, the market value of common equity, the daily averages of bid and ask prices, the standard deviation of daily share price are the control variables. Thus, the fifth regression equation is as follows:

$$ANA = \beta_0 + \beta_1 DS + \beta_2 TF + \beta_3 TSZ + \beta_4 SIZE + \beta_5 PR + \beta_6 PRVOL + \varepsilon \quad \text{Eq. (5)}$$

where *ANA* denotes the number of the analysts following. *DS* is variously the overall disclosure score, the annual report score, the disclosure score from strategy information section, the disclosure score from non financial information section, the disclosure score form financial information section, the disclosure score from channels of information and investor relations section, public disclosure score, or private disclosure score respectively. All control variables are as previously defined.

Table 8-21 presents the results from multivariate regression analysis for the sixth hypothesis. Based on the prior research (Lang & Lundholm, 1993, 1996), the coefficient for the level of disclosure is predicted to be positive. The sign predicted for each control variable is as discussed previously. Models (28), (29), (30), (31), (33), (34), and (35) are estimating equation (5) where the dependent variable is the number of the analysts following and the independent variable is variously the overall disclosure score, disclosure score from annual report, the disclosure score from strategy information section, non-financial section, channels of information and investor relations section, public disclosure score, or private disclosure score respectively.

The regression results reveal good fit for all models. The adjusted R^2 for each regression model, range from 27.23 percent to 72.58 percent. Model (34), using the public disclosure score, has the highest adjusted R^2 which is 72.58 percent, while the private disclosure score model (model 35) shows an adjusted R^2 at 67.96 percent. The coefficients for the disclosure scores in models (28), (29), (30), (31), (33), (34), and (35) are, as expected positive, (0.236, 0.157, 0.238, 0.216, 0.198, 0.873 and 0.784 respectively). The coefficient in model (29) is significant at the 10 percent level, in models (31) and (33) it is significant at the level of 5 percent level, and in models (28), (30), (34), and (35) at the 1 percent level.

Model (32) present the results of estimating equation (5) where the dependent variable is the number of the analysts following and the independent variable is the disclosure score from non financial information section. The adjusted R^2 for this model is 24.96 percent. The results indicate negative but not significant, relationship between the number of the analysts following the company and the level of disclosure. The coefficient on the disclosure score is -0.048, with a t-statistic of -0.55.

Based on this findings, model (32) suggest that hypothesis *H6* cannot be accepted. However, with respect to hypothesis *H6*, the results from models (28), (29), (30), (31), (33), (34), and (35) indicate a positive and significant relationship between the number of the analysts following a company and the level of the company's disclosure. These results suggest that the more the listed companies disclose voluntary information, in particular for the overall disclosure, the annual report, strategy section, non-financial section, the channels of information and investor relations, the greater the analyst following. In addition, the views of financial intermediaries, as reflected the ratings of the public and private channels, are associated with analyst following.

Table 8-21: Regression of the number of analysts following on disclosure score and control variables

$$ANA = \beta_0 + \beta_1 DS + \beta_2 TF + \beta_3 TSZ + \beta_4 SIZE + \beta_5 PR + \beta_6 PRVOL + \varepsilon \qquad \text{Eq. (5)}$$

Variable	Model 28 (Overall)	Model 29 (Annual)	Model 30 (Str)	Model 31 (Non)	Model 32 (Fin)	Model 33 (Other)	Model 34 (Public)	Model 35 (Private)
Disclosure	.236	.157	.238	.216	-.048	.198	.873	.784
	2.67***	1.79*	2.74***	2.42**	-.55	2.20**	12.74***	11.20***
Trade frequency	.331	.329	.340	.332	.329	.329	.192	.197
	2.65***	2.58**	2.73***	2.64***	2.54**	2.61**	2.44**	2.32**
Trade size	-.296	-.332	-.327	-.319	-.336	-.284	-.474	-.105
	-3.02***	-3.37***	-3.39***	-3.27***	-3.35***	-2.81***	-.73	-1.54
Company size	.077	.103	.058	.069	.106	.080	-.075	-.038
	.59	.78	.44	.53	.78	.61	-.92	-.43
Share price	.723	.715	.678	.700	.795	.816	-.108	.110
	1.85*	1.79*	1.73*	1.78*	1.97*	2.07**	-.43	.41
Return volatility	-.644	-.633	-.578	-.620	-.686	-.713	.016	-.169
	-1.68*	-1.61	-1.50	-1.60	-1.73*	-1.84*	.07	-.64

Table 8.21 : continued

Variable	Model 28 (Overall)	Model 29 (Annual)	Model 30 (Str)	Model 31 (Non)	Model 32 (Fin)	Model 33 (Other)	Model 34 (Public)	Model 35 (Private)
N	100	100	100	100	100	100	100	100
Adjusted R^2	.3414	.2723	.3033	.2917	.2496	.2844	.7258	.6796
F	9.55***	7.18***	8.18***	7.8***	6.49***	7.56***	44.68***	35.99***
Breusch-Pacan	0.03	0.63	0.84	0.09	1.10	2.38	0.40	1.65
Jarque-Bera	5.863	7.292	7.609	7.956	5.644	4.958	2.217	2.135

 *, ** and *** indicate significance at p < .1, p < .05, and p < .01 respectively
[†] **indicate JB value higher than 9.21 and reject the null hypothesis of normality at 1 %**

Notes: 1. Coefficient is shown in the upper line (bold line), and the lower line (italic line) shows White's (1980) adjusted *t*-statistics.
   2. Jarque-Bera statistic, the critical value for the null hypothesis of normality distribution is 5.99 at the 5 percent significance level, and 9.21 at the 1 percent
      significant level.

ANA is the number of analysts following the company, *DS* is variously the disclosure score; overall, annual, strategic, non-financial, financial, other, public, and private disclosure score, *TF* is the average number of transaction trades per day, *TSZ* is the daily average trade volume, *SIZE* is the market value of common equity, *PR* is the daily averages of bid and ask prices, and *PRVOL* is the standard deviation of daily share price.

8.4 Sensitivity analysis

As discussed in the previous chapter, sensitivity analysis is useful when the researcher is attempting to determine which variables are the key drivers of the results. In this study, five additional tests are performed in order to establish the robustness of the results. The sensitivity analysis is divided into six cases as follow.

- The first is to change the dependent variable.
- The second is to change the disclosure score variables.
- The third is to change the measure of analysts following.
- The fourth is to exclude some variables where there is a problem of multicollinearity.
- The fifth is to exclude the outliers.
- The sixth is to exclude companies in the Financials Industry Group.

The results for each case of the sensitivity analysis tests are shown below.

Case I : Change the dependent variable

For the first sensitivity test, the variable for market liquidity, the key variable of this study, was changed from the reciprocal effective bid-ask spread (model 1) into the quoted bid-ask spread (model 36) and relative bid-ask spread (model 37). *Quoted bid-ask spread* is the difference between the bid and the ask price, while the *Relative bid-ask spread* is defined as the ask price minus the bid price, divided by the midpoint (the average of the bid-ask prices).

As can be seen from Table 8-22, the regression results reveal good fits for the effective relative bid-ask spread model (model 1) with an adjusted R^2 of 0.3352, while the quoted spread model (model 36) and the relative bid-ask spread model (model 37) did not reveal a good fit. The highest adjusted R^2 from the effective relative bid-ask spread model suggests that 33.52 percent of the effective relative bid-ask spread variation is explained by the overall disclosure score and control variables.

Table 8-22: Sensitivity analysis case I : Change the disclosure score variable

$$SPREAD = \beta_0 + \beta_1 DS + \beta_2 TF + \beta_3 TSZ + \beta_4 SIZE + \beta_5 PR + \beta_6 PRVOL + \varepsilon \qquad \text{Eq. (1)}$$

Variable	Model 1 (Effective relative)	Model 36 (Quoted)	Model 37 (Relative)
Disclosure score	**.265**	**-.014**	**-.150**
	*3.05** *	*-1.67* *	*-1.84* *
Trade frequency	**.320**	**-.022**	**-.110**
	*2.63** *	*-1.84* *	*-.88*
Trade size	**-.176**	**.006**	**.096**
	-1.85 *	*1.03*	*1.94* *
Company size	**.066**	**-.091**	**.001**
	.52	*-4.57*** *	*0.02*
Share price	**1.104**	**1.041**	**.220**
	*2.90*** *	*11.45*** *	*.59*
Return volatility	**-.959**	**.020**	**-.229**
	*-2.56** *	*.26*	*-.64*
N	100	100	100
Adjusted R^2	0.3352	.0907	.0080
F	18.21***	16.2***	0.87
Breusch-Pacan	0.51	54.21***	13.75***
Jarque-Bera	5.099	192.433[†]	210.628[†]

*, ** and *** indicate significance at p < .1, p < .05, and p < .01 respectively
[†] indicate JB value higher than 9.21 and reject the null hypothesis of normality at 1 %

Notes: 1. Coefficient is shown in the upper line (bold line), and the lower line (italic line) shows White's (1980) adjusted *t*-statistics.
2. Jarque-Bera statistic, the critical value for the null hypothesis of normality distribution is 5.99 at the 5 percent significance level, and 9.21 at the 1 percent significant level.

SPREAD is variously the bid-ask spread; the reciprocal of the effective relative bid-ask spread, quoted spread, and relative bid-ask spread, *DS* is the overall disclosure score, *TF* is the average number of transaction trades per day, *TSZ* is the daily average trade volume, *SIZE* is the market value of common equity, *PR* is the daily averages of bid and ask prices, and *PRVOL* is the standard deviation of daily share price.

The results from Table 8-22 also show that most variables, both key variables and control variables, behave as predicted (the results from model 1 show different coefficient signs from model 36 and model 37, because it is the reciprocal model.). Furthermore, the coefficient and the level of significance for all of the variables from the quoted spread model (model 36) and the relative bid-ask spread model (model 37) are nearly the same as for the variables from the effective relative bid-ask spread model (model 1). These findings suggest that both the quoted spread and the relative bid-ask spread behave as predicted relative to the disclosure and control variables, which implies that these sensitivity analysis tests support the reported results from the effective relative bid-ask spread model (model 1).

Case II : Change the disclosure score variables

For the second sensitivity test, the variable for disclosure score, the key variable of this study, was changed from the overall disclosure score (model 1) into the raw disclosure score (model 38) and the rank overall disclosure score (model 39) respectively.

Disc is the raw disclosure score which is calculated as the total disclosure index score divided by the total maximum score for that company (on a scale from 0.00 to 1.00 with a larger number indicating more information disclosure). *Overall* is an equal weighted average of the four major categories of information types, the strategic information score, non-financial information score, financial information score, and the other channels of information (on a scale from 0.00 to 1.00 with a larger number indicating more information disclosure). *Rank overall* [20] is the percentile of company's disclosure rank score which zero is the lowest ranking disclosure score group and one is the highest ranking disclosure score group.

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[20] the rank ordered computed by: $(rank - 1)/(number\,of\,company - 1)$

Table 8-23: Sensitivity analysis case II : Change the disclosure score variables

$$SPREAD = \beta_0 + \beta_1 DS + \beta_2 TF + \beta_3 TSZ + \beta_4 SIZE + \beta_5 PR + \beta_6 PRVOL + \varepsilon \qquad \text{Eq. (1)}$$

Variable	Model 1 (Overall)	Model 38 (Raw score)	Model 39 (Rank overall)
Disclosure score	**.265**	**.184**	**.228**
	3.05**	*2.07**	*2.61***
Trade frequency	**.320**	**.271**	**.321**
	2.63**	*2.13***	*2.60***
Trade size	**-.176**	**-.206**	**-.167**
	-1.85*	*-2.13***	*-1.73**
Company size	**.066**	**.071**	**.093**
	.52	*.53*	*.72*
Share price	**1.104**	**1.142**	**1.131**
	2.90***	*2.93****	*2.94****
Return volatility	**-.959**	**-.993**	**-.991**
	-2.56**	*-2.58***	*-2.61***
N	100	100	100
Adjusted R^2	0.3352	.3006	0.3184
F	18.21***	8.09***	9.32***
Breusch-Pacan	0.51	0.26	1.00
Jarque-Bera	5.099	5.93	5.994

*, ** and *** indicate significance at p < .1, p < .05, and p < .01 respectively
[†] indicate JB value higher than 9.21 and reject the null hypothesis of normality at 1 %

Notes: 1. Coefficient is shown in the upper line (bold line), and the lower line (italic line) shows
White's (1980) adjusted *t*-statistics.
   2. Jarque-Bera statistic, the critical value for the null hypothesis of normality distribution is 5.99
at the 5 percent significance level, and 9.21 at the 1 percent significant level.

SPREAD is the reciprocal of the effective relative bid-ask spread, *DS* is variously the disclosure score; overall, raw disclosure score and rank disclosure score, *TF* is the average number of transaction trades per day, *TSZ* is the daily average trade volume, *SIZE* is the market value of common equity, *PR* is the daily averages of bid and ask prices, and *PRVOL* is the standard deviation of daily share price.

As can be seen from Table 8-23, all models show the significant of the ANOVA test beyond the 0.001 level. The regression results reveal good fits for the models, the adjusted R^2 ranging from 30.06 to 33.52. The highest adjusted R^2 from the overall disclosure score model suggests that 33.52 percent of the effective relative bid ask spread variation is explained by the overall disclosure score and control variables.

Moreover, the results from Table 8-23 show that all variables, both key variable and control variables, from the raw disclosure score model (model 38) and the rank disclosure score model (model 39) behave in the same way as the key variable and the control variables from the overall disclosure score model (model 1). Furthermore, the coefficient and the level of significance for all of the variables from (model 38) and (model 39) are nearly the same as for the variables from the overall disclosure score model (model 1). These findings suggest that both the raw disclosure score and the rank overall disclosure score are positively related to the market liquidity, which implies that these sensitivity analysis tests support the reported results from the overall disclosure score model (model 1).

Case III : Change the measure of analyst following

For the third case of sensitivity test, the measure of analyst following was changed from the number of analyst following the listed company as shown on the Securities Analysts Association's web site (*Analysts web*: model 28) to the number of analysts following the listed companies as derived from the questionnaire survey (*Analysts Q'naire*: model 40).

The results from Table 8-24 indicate that the adjusted R^2 from *Analysts Q'naire* model (Adj R^2 30.07 percent) is lower than the adjusted R^2 from *Analysts web* model (Adj R^2 31.14 percent) which suggests that the *Analysts web* model provides a better fit. However, the results for both models shown that all variables behave in the same way and the coefficients and the levels of significance for all of the variables are nearly the same. These findings suggest that the *Analysts Q'naire* is positively related to the overall disclosure score, which could be implies that this sensitivity analysis test support the reported results from the *Analysts web* (model 28).

Table 8-24: Sensitivity analysis case III : Change the measure of analyst following

$$ANA = \beta_0 + \beta_1 DS + \beta_2 TF + \beta_3 TSZ + \beta_4 SIZE + \beta_5 PR + \beta_6 PRVOL + \varepsilon \qquad \text{Eq. (5)}$$

Variable	Model 28 (Saa's web)	Model 40 (Q'naire)
Disclosure score	**.236**	**.145**
	2.67***	*1.69**
Trade frequency	**.331**	**.377**
	2.65***	*3.11****
Trade size	**-.296**	**-.236**
	-3.02***	*-2.48***
Company size	**.077**	**.065**
	.59	*.52*
Share price	**.723**	**.839**
	1.85*	*2.22***
Return volatility	**-.644**	**-.631**
	-1.68*	*1.69**
N	100	100
Adjusted R^2	.3414	.3007
F	9.55***	8.09***
Breusch-Pacan	0.03	1.43
Jarque-Bera	5.86	1.39

  *, ** and *** indicate significance at p < .1, p < .05, and p < .01 respectively
[†] indicate JB value higher than 9.21 and reject the null hypothesis of normality at 1 %

Notes: 1. Coefficient is shown in the upper line (bold line), and the lower line (italic line) shows White's (1980) adjusted *t*-statistics.
2. Jarque-Bera statistic, the critical value for the null hypothesis of normality distribution is 5.99 at the 5 percent significance level, and 9.21 at the 1 percent significant level.

ANA is the number of analysts following the company, *DS* is the overall disclosure score, *TF* is the average number of transaction trades per day, *TSZ* is the daily average trade volume, *SIZE* is the market value of common equity, *PR* is the daily averages of bid and ask prices, and *PRVOL* is the standard deviation of daily share price.

Case IV : Exclude some variables where there is a problem of multicollinearity

Exclude return volatility

For the fourth sensitivity test, some control variables are excluded from the regression model. As discussed in the previous section, Table 8-12 shows a high correlation between share price and return volatility. This could lead to the problems of multicollinearity. In order to resolve this problem, the variable with the lower correlation coefficient with dependent variable is removed from the model. As show in Table 8-13, return volatility (r=0.230) has the lower correlation coefficient with the reciprocal of the effective relative bid ask spread than share price(r=0.438). Hence, return volatility is excluded from the model (Eq.1). The regression specification is as follows:

$$SPREAD = \beta_0 + \beta_1 DS + \beta_2 TF + \beta_3 TSZ + \beta_4 SIZE + \beta_5 PR + \varepsilon \qquad \text{Eq. (6)}$$

As can be seen from Table 8-25, the regression results show a good fit for the model, with 27.62 percent of the variation in the effective relative bid ask spread being explained by the overall disclosure score and control variables. The overall disclosure score coefficient is positive and significant at the 0.01 level. This finding shows that the overall disclosure score is positively related to the market liquidity, providing sensitivity support the results from Hypothesis 1.

Table 8-25: Sensitivity analysis case IV : Exclude return volatility

$$SPREAD = \beta_0 + \beta_1 DS + \beta_2 TF + \beta_3 TSZ + \beta_4 SIZE + \beta_5 PR + \varepsilon \qquad \text{Eq. (6)}$$

Variable	Model 41
Disclosure score	**.237**
	2.63***
Trade frequency	**.427**
	3.57***
Trade size	**-.151**
	-1.52
Company size	**.160**
	1.23
Share price	**.164**
	1.49
N	100
Adjusted R^2	.2762
F	8.56***
Breusch-Pacan	0.4
Jarque-Bera	5.45

*, ** and *** indicate significance at p < .1, p < .05, and p < .01 respectively
[†] **indicate JB value higher than 9.21 and reject the null hypothesis of normality at 1 %**

Notes: 1. Coefficient is shown in the upper line (bold line), and the lower line (italic line) shows White's (1980) adjusted *t*-statistics.
   2. Jarque-Bera statistic, the critical value for the null hypothesis of normality distribution is 5.99 at the 5 percent significance level, and 9.21 at the 1 percent significant level.

SPREAD is the reciprocal of the effective relative bid-ask spread, *DS* is the over all disclosure score, *TF* is the average number of transaction trades per day, *TSZ* is the daily average trade volume, *SIZE* is the market value of common equity, and *PR* is the daily averages of bid and ask prices.

Exclude trade frequency and return volatility

In a further sensitivity test, trade frequency and return volatility are excluded from the regression model. As the results in Table 8-12 show, there are two pairs of control variables with high correlations. The first pair is trade frequency and trade size, and the other pair is share price and return volatility. To deal with this problem of multicollinearity, one variable from each pair was removed from the model (Eq.1). The criteria employed in is to exclude variables from the model by considering each pair of variables, and leave only the variable that has the highest correlation with the dependent variable, the reciprocal of the effective relative bid ask spread. For the first pair, trade frequency and trade size, the results in the Table 8-13 show that trade size (r=0.525) has a higher correlation with the reciprocal of the effective relative bid ask spread than trade frequency (r=0.284). For the second pair, share price and return volatility, the results in the Table 8-13 show that share price (r=0.438) has higher correlation with the reciprocal of the effective relative bid ask spread than return volatility (r=0.230). Therefore, the trade frequency and return volatility variables were removed from the model (Eq.1). The regression specification is as follows:

$$SPREAD = \beta_0 + \beta_1 DS + \beta_2 TSZ + \beta_3 SIZE + \beta_4 PR + \varepsilon \qquad \text{Eq. (7)}$$

As can be seen from Table 8-26, the regression results do not show a good fit for the model, the adjusted R^2 is 18.70 percent. The coefficient on the overall disclosure score is 0.245 and behaves as expected with a t-statistic of 2.57, and significant at less than the 5 percent level. Overall, this finding supports the reported results from Hypothesis 1.

Table 8-26: Sensitivity analysis case IV : Exclude trade frequency and return volatility

$$SPREAD = \beta_0 + \beta_1 DS + \beta_2 TSZ + \beta_3 SIZE + \beta_4 PR + \varepsilon \qquad \text{Eq. (7)}$$

Variable	Model 42
Disclosure score	**.245**
	2.57**
Trade size	**-.318**
	-3.42***
Company size	**-.085**
	-.73
Share price	**.137**
	1.17
N	100
Adjusted R^2	.1870
F	6.69***
Breusch-Pacan	0.01
Jarque-Bera	3173.57[†]

*, ** and *** indicate significance at p < .1, p < .05, and p < .01 respectively
[†] indicate JB value higher than 9.21 and reject the null hypothesis of normality at 1 %

Notes: 1. Coefficient is shown in the upper line (bold line), and the lower line (italic line) shows White's (1980) adjusted *t*-statistics.
2. Jarque-Bera statistic, the critical value for the null hypothesis of normality distribution is 5.99 at the 5 percent significance level, and 9.21 at the 1 percent significant level.

SPREAD is the reciprocal of the effective relative bid-ask spread, *DS* is the over all disclosure score, *TSZ* is the daily average trade volume, *SIZE* is the market value of common equity, and *PR* is the daily averages of bid and ask prices.

Case V : Exclude outliers and influential observations

In statistics, unusual observations are generally either outliers or influential data points. Outlier refers to case "*when extreme values occur on one variable or a combination of variables, these data points are termed outliers*" (Hutcheson and Sofroniou, 1999: 19). The outliers can have an undue influence or can be distorted on some statistical analyses, in particular parametric statistic. According to de Vaus (2009), there is no precise statistical definition of an outlier. However, a common approach to defining outliers in univariate analysis is the number of standard deviations the case lies from the mean. For bivariate and multivariate analysis, statistics based on standardized residuals was employed. Cases with value above ± 3 will be defined as the outliers. For influential observations, Cook's distance was employed. Fox (1997) quoted in de Vaus (2009, p.94), suggests a value of 4/(n-k-1), where n is the number of cases and k is the number of independent variables, as a cut-off for detecting influential observations.

From the analysis, Table 8-27 (model 43a), one observation has been identified as the outlier and was excluded from the model, the overall disclosure score model (model 43a) explained 35.4 percent as measured by the adjusted R^2 which is approximately 2 percent greater than for the full sample model (model 1). This suggests that when the outlier is excluded from the full samples model, the effective relative bid ask spread variation is better explained by the overall disclosure score and control variables. Moreover, both key and control variables behave in the same way as the result from the full samples model (model 1) with the better level of significant. These findings suggest that by excluding outlier from the model, the overall disclosure score is positively related to the market liquidity which supports the reported results from the full samples model (model 1).

Subsequent to the outlier tests, the data was also tested for influential observations. The result from Table 8-27 show that when five influential cases were excluded from the model, the overall disclosure score model (model 43b) explained approximately 0.5 percent higher than for the full sample model (model 1), and both key and control variables are behave in the same way as the result from the full samples model (model 1). These findings suggest that by excluding the influential observations from the

model, the overall disclosure score is positively related to the market liquidity which supports the reported results from the full samples model (model 1).

Case VI : Exclude companies in the Financials Industry Group from the sample

For the final sensitivity test is to exclude companies in the Financials industry group from the sample. As discussed earlier, some previous studies exclude companies in the financial sector, such as banking, finance and securities companies, because of the specific accounting rules applying to these companies. To address this problem, companies in the Financial industry group (19 companies) are excluded from the full sample, leaving 81 listed companies for this sensitivity test. Table 8-27 show a good fit when financial companies are excluded from the sample (model 44). As measured by the adjusted R^2, 33.49 percent of the effective relative bid ask spread variation is explained by the overall disclosure score and the control variables. The key variable and control variables from the reduced sample behave in the same way as in the full samples (model 1). In addition, although the coefficient on the level of disclosure score from the excluded sample model are slightly lower and not significance, the coefficient and the level of significant for the others variables are generally very similar to the result reported for the full samples model (model 1). Based on this finding the overall disclosure score, in the reduced sample, is positively related to the market liquidity. This sensitivity analysis tests support the reported results from the full sample (model 1).

Table 8-27: Sensitivity analysis case V and VI : Exclude the outliers and exclude companies in the Financials Industry Group

$$SPREAD = \beta_0 + \beta_1 DS + \beta_2 TF + \beta_3 TSZ + \beta_4 SIZE + \beta_5 PR + \beta_6 PRVOL + \varepsilon \qquad \text{Eq. (1)}$$

Variable	Model 1 (Full sample)	Model 43a (Exclude outliers)	Model 43b (Exclude influential observations)	Model 44 (Exclude Financial group)
Disclosure score	**.265**	**.237**	**.269**	**.205**
	3.05**	*2.767****	*3.09****	*2.13***
Trade frequency	**.320**	**.356**	**.327**	**.298**
	2.63**	*2.952****	*2.52***	*2.18***
Trade size	**-.176**	**-.173**	**-.145**	**-.172**
	-1.85*	*-1.824***	*-1.49*	*-1.62*
Company size	**.066**	**.105**	**-.200**	**.102**
	.52	*.834*	*-.13*	*.75*
Share price	**1.104**	**1.129**	**1.035**	**1.332**
	2.90***	*2.995****	*3.24****	*3.02****
Return volatility	**-.959**	**-.992**	**-.757**	**-1.19**
	-2.56**	*-2.675****	*-2.36***	*-2.72****
N	100	99	95	81
Adjusted R^2	0.3352	.354	.3404	.3349
F	18.21***	9.951***	9.09***	7.71***
Breusch-Pacan	0.51	0.19	0.19	.71
Jarque-Bera	5.099	1.295	5.335	3.226

*, ** and *** indicate significance at $p < .1$, $p < .05$, and $p < .01$ respectively
[†] indicate JB value higher than 9.21 and reject the null hypothesis of normality at 1 %

Notes: 1. Coefficient is shown in the upper line (bold line), and the lower line (italic line) shows White's (1980) adjusted *t*-statistics.
     2. Jarque-Bera statistic, the critical value for the null hypothesis of normality distribution is 5.99 at the 5 percent significance level, and 9.21 at the 1 percent significant level.

SPREAD is the reciprocal of the effective relative bid-ask spread, *DS* is the overall disclosure score, *TF* is the average number of transaction trades per day, *TSZ* is the daily average trade volume, *SIZE* is the market value of common equity, *PR* is the daily averages of bid and ask prices, and *PRVOL* is the standard deviation of daily share price.

8.5 Summary

The descriptive statistics for each of the unadjusted variables are presented in this chapter, together with the results of tests to measure the reliability and validity of the key variable. This is followed by the correlation coefficients between the level of disclosure and the stock market liquidity.

This main part of the chapter reports the results of tests of the research hypotheses. These tests include the benchmark test between the level of disclosure and the effective relative bid ask spread and the additional tests of the research hypotheses. The results for the sensitivity analysis tests were presented at the end of this chapter. The research hypotheses and the empirical results for the quantitative part will be discussed in the next chapter.

Chapter 9

Conclusions, contributions, and suggestions for future research

This study used a two-phase exploratory design with a qualitative method phase and a quantitative method phase. The first section of this chapter begins by reviewing of two main research objectives for the qualitative and quantitative phases of the study. First, the study aims to provide a better understanding of corporate disclosure and the use of information by financial intermediaries based on the views of the financial analysts and fund managers in Thailand. Second, the study aims to examine the relationship between the level of voluntary information and stock market liquidity. The second section of the chapter provides a summary of the data and research methodology. The third section presents the themes arising from the interviews and the empirical results from the quantitative part of the study. This is followed by a review of the major contributions of this study, and the final section is identifies avenues of the future research.

9.1 Principal research objectives and hypothesis development

The thesis employed the sequential exploratory design that divided the study into two main parts. The first part of the study aimed to provide a better understanding of corporate disclosure and the use of information based on the views of the financial analysts and the fund managers in Thailand. The specific research objectives for this phase are to gain an understanding of the preferences of Thai financial intermediaries for sources and channels of information disclosure and to obtain their views about the quality of disclosure. The financial intermediaries' views of the reasons why companies may choose to disclose information voluntarily, the usefulness of information types contained within the annual report, and the extent to which the auditor's report enhances the value of the annual report. The result from this first part informed the second part of the study.

The main purpose for the second quantitative phase of the study is to examine the effect of the level of voluntary information disclosure on the liquidity of shares traded on the Stock Exchange of Thailand. This phase also aims to investigate other key variables in the conceptual framework. The specific research objectives for the additional analysis of this phase are to examine whether each category of voluntary information disclose in the annual report has equal impact on the stock market liquidity, and to examine whether the two channels of information disclosure have different effects on the stock market liquidity. In addition, the relationship between auditor quality, as reflected in audit firm size, and information disclosure and stock market liquidity is examined. Finally, the relationship between analysts following and information disclosure is explored.

9.2 Data and research methodology

As stated above, this study uses the mixed method approach, and so the data collection and the research methods are divided into two main parts. This first qualitative phase is based on a series of semi-structured interviews with Thai securities analysts and fund managers. The interviews are analysed using grounded theory. What emerges from the interviews is an understanding of the corporate

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disclosure and the link between the level and the quality of information disclosure, and the share prices. The findings obtained from the interview, which provides a better understanding of the corporate disclosure and the use of information based on the views of the financial analysts and the fund managers in Thailand, are used to inform the second phase of the research. In particular, Thai securities analysts and fund managers perceived listed companies as disclosing more voluntary information in order to improve the companies' transparency and the investor confidence, which in turn, enhances the stock market liquidity.

The second part of the research involves the development of the research instruments to measure the level of voluntary information disclosure to examine the relationship between the level of information disclosure and stock market liquidity. In this phase, two research instruments are developed. The first research instrument is the analysts rating questionnaire that obtained from the opinions of financial analysts and fund managers about the level of information disclosure of those listed companies that they are currently following. The other research instrument is the disclosure index. The disclosure items in the disclosure index are developed from the previous related research and from the qualitative findings. The measures of the level of information disclosure from these two approaches are then incorporated into regression models to explain the levels of stock market liquidity of companies in the SET 100 Index.

9.3 Conclusion of themes arising from the interviews

The first part of the study primarily aims to provide a better understanding of corporate disclosure and the use of information based on the views of Thai financial intermediaries. Each themes arising from the interviews is summarised below.

Sources and channels of information disclosure

The findings from the qualitative study indicate that the information used by Thai securities' analysts and fund managers comes from both public and private disclosures by companies. The main public disclosures are seen to be the companies'

annual reports and information disclosure reports (Form 56-1), while the private channels of communication with companies come through personal contacts such as face-to-face meetings and telephone conversations with senior executives, company visits and contact with companies' Investor Relation (IR) departments.

Most interviewees asserted that private disclosure is their preferred channel of receiving information from the company because it is a two-way communication process that allows them to develop a clear understanding of the company, and acquire more in-depth information that they cannot find out from the papers or the annual report. The information is usually provided by the company's top management. It therefore provides a good opportunity for the securities analysts and fund managers to ask questions on topics not covered in the annual report. In addition, personal contact with companies enables them to develop an understanding of company strategy and the future direction of company. Finally, Thai securities analysts and fund managers indicated that IR departments are important sources of information, especially in specialist industries that have complicated products or services.

However, the findings indicate that companies' annual reports are often seen as important sources of information for Thai securities analysts and fund managers in providing background and enabling them to identify issues to discuss in private contact with company management. Thus, the analysis of the annual report is a precursor to direct contact with the companies' top management.

Reason for disclosure and the quality of disclosure

The results show that Thai financial intermediaries identify several reasons why the companies disclose information publicly. Most of the companies disclose information to meet SET requirements, to present a good image of the company, and to increase its business value and its market value. Nevertheless, the financial intermediaries pointed out that transparency is the most important reason for disclosure. They indicated that investors believe that a company will be seen to be creditable if is transparent. By being transparent, a company provides a clear picture of its situation

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that enables financial intermediaries to get better understanding of the company's direction.

The quality of company disclosure was seen by Thai financial securities and fund managers to be related to two main factors: the regulator and the company itself. Moreover, the interviewees indicated that the quality and the level of information disclosures are also related to company size. They divided Thai listed companies into two groups: large listed companies, and the medium and small listed companies. They pointed out that large listed companies usually disclose information in excess of the requirements of the SET because the market mechanism has more influence on this group. On the other hand, most medium and small listed companies usually disclose their information at the minimum requirement of the SET.

Voluntary disclosure

Thai security analysts and fund managers identified that the most important reason for a company to disclose voluntary information is that to increase company's transparency and increase, or restore, investor confidence. This in turn is seen to lead to an increase the stock market liquidity and the share price.

The annual report

It is common to distinguish between two types of information disclosed by the companies in their annual reports: quantitative information and qualitative information. Thai financial intermediaries use both quantitative and qualitative information, with different preferences for information type. Some financial intermediaries interviewed indicated a preference for quantitative information, while others indicated that they preferred qualitative information. Most of the interviewees, however, stated that they pay attention in both types of information equally. Quantitative information is perceived to be more about the past and is used in analysing trends in order to forecast the future, whereas qualitative information may provide a guide to the future direction of the company. Therefore, without both types of information, the analyses will not be complete.

Some of the interviewees indicated that the most useful parts in the annual report are those sections containing qualitative information, rather than quantitative information. This is because they could obtain much of the financial information before receiving the annual report. The qualitative information not only provides background for private contact with the company, it also provides the executives' views of the company's future direction, and so provides a context for interpreting the quantitative information. So predictions about future financial performance may be based on past tends and the narrative disclosures about the future direction of the company.

Audit firm size and the annual report

Thai financial intermediaries generally indicated that the audit is important. In particular, they suggested that as the auditors verify the accuracy of the financial statements, thereby increasing the credibility of the financial report. Most of the interviewees perceived that big, or the international, audit firms as being more credible than smaller or local audit firms. Others interviewees, however, indicated that they did not put too much weight on the reputation of audit firms because they believed that all audit firms licensed by the Securities and Exchange Commission of Thailand (SEC) met the minimum requirement of the SEC and so audit to a least the minimum standards set by the SEC. These financial intermediaries are therefore indifferent about the size of the audit firm.

9.4 Conclusion of the results from the quantitative studies

The second part of the study primarily investigates whether the level of voluntary information disclosure by Thai listed companies affects the liquidity of shares traded on the Stock Exchange of Thailand. Specifically, it examines the relationship between stock market liquidity and: (i) categories of information disclosure; and (ii) channels of information disclosure. The results of the statistical tests performed in this study support the general hypothesis that higher levels of voluntary information disclosure mitigate the information asymmetry in the market capital, and so enhance the stock market liquidity. The second part of the study also aimed to investigate further the

relationship between information disclosure, stock market liquidity, and the other key variables in the conceptual framework. In particular examining the relationship between information disclosure and: (i) audit firm size, and (ii) number of analysts following the company. The results are discussed below.

Hypothesis 1: Market liquidity and information disclosures

The first hypothesis is that a higher level of voluntary information disclosure helps to reduce the information asymmetry between a company's managers and investors, and between informed and less informed investors, and so enhance the company's stock market liquidity. As stated earlier, there are two research instruments used for measuring the level of voluntary information disclosure. The first instrument is the disclosure index, and the other instrument is the analysts rating. Thus, the first hypothesis was broken down into four sub-hypotheses in order to check the validity of the instruments.

The results provided in Table 8-14 show that sub-hypotheses for the first hypothesis can be accepted. These four sub-hypotheses relate to the disclosure scores from the disclosure index instrument (models (1) and (2)), i.e. the overall level of the information disclosure and the level of information disclosure in the annual report, and the disclosure scores from the analysts rating instrument (models (3) and (4)), i.e. public and private disclosure score. All four results from sub-hypotheses support the first hypothesis and indicate the higher coefficient on the disclosure score from the results using the analysts rating than the results using disclosure index approach.

The difference between the results of these two research instruments may, however, be due to the limitation of the research instruments design. Both of the public and the private disclosure scores are obtained from an analysts rating instrument. This measures the level of disclosure by asking Thai securities analyst and fund managers to rate those companies that they are following. As the approach is subjective, there may be some biases in the rating. In particular, they may perceive a link between company disclosure and the company size. The results in the qualitative part of this study indicate that Thai financial intermediaries perceive larger companies as

disclosing more information. Thus, it is possible that the securities analysts and fund managers gave higher scores to the larger companies as they believed that the larger companies disclose more information.

Overall, these results for the first hypothesis are consistent with previous studies where the data are obtained from developed countries (Welker, 1995; Healy, Hutton & Palepu, 1999; Heflin, Shaw & Wild, 2001; Petersen & Plenborg, 2006). This lends support to the information asymmetry theory that higher level of information disclosure can reduce the information asymmetry in capital markets, improve the efficiency of the capital markets, and enhance stock market liquidity. Specifically, the results emphasise the importance of public information disclosure as a variable that affects stock market liquidity. In addition, it is possible to conjecture from the results of this study that differences in the results of studies on corporate disclosure may be explained in terms of the approaches used to measuring disclosure.

Hypothesis 2: Market liquidity and categories of information disclosures

The evidence in support of the first hypothesis that public information disclosure is a key factor affecting the stock market liquidity leads the researcher to the second hypothesis. By using the self-constructed disclosure index approach, it is possible to examine the impact of categories of information disclosure on stock market liquidity. The disclosure index score is a weighted average score of four categories: (1) the strategic information section, (2) the non-financial information section, (3) the financial information section, and (4) the other channels of information and investor relations section. Specifically, the first category, the strategic information section, consists of voluntary disclosure in the annual report that includes general corporate information, company strategy, production, research and development, market strategy, competition, outlook, and future prospects. The second category, the non-financial information section, consists of information about directors, employees, and social policy and value added. The third category, the financial information section, consists of voluntary disclosure in the financial review and the management discussion and analysis. The final category consists of voluntary disclosure from the other channels of information and investor relations and includes the information

from the company's website, and the information about the investor relations department. Thus, the second hypothesis focuses on the relationships between the four categories of voluntary information disclosure from the disclosure index instrument and stock market liquidity.

To assess the differential impact of these four detailed categories of the disclosure index, the first sub-hypothesis ($H2_a$) concerns the impact of the four detailed categories of voluntary information disclosure from the disclosure index instrument on stock market liquidity was examined.

The results shown in Table 8-15, model (5), which support hypothesis $H2_a$, show that the relationship between the market liquidity and the information disclosure between the four specific categories of voluntary information disclosure from the disclosure index varies. This evidence suggests it is the voluntary information from the strategic and the financial sections that is useful in reducing information asymmetry between the managers and the investors, or between informed and less informed investors, which in turn increase companies' stock market liquidity. These results are consistent with the arguments from the previous studies (Dye, 1998; Bushman & Smith, 2001; and Hope, 2003) that not all types of information disclosure may be of equal value to securities analysts and fund managers, or even to general investors.

The results provided in Table 8-15, models (6) – (9), also show that the four detailed categories from the disclosure index instrument have different impacts on the stock market liquidity. From the results, the coefficients for each category of information disclosure take on the expected sign, but only the coefficients for two detailed categories of voluntary information disclosure, the strategic and the financial sections, are statistically significant. These findings imply that the market liquidity is positively related to the level of voluntary information disclosure in the strategic and the financial sections of the annual report.

The results suggest that the most important impact on the stock market liquidity is the strategic section, followed by the financial section. It can be concluded from these results that it is voluntary disclose of qualitative information, in particular information from the strategic section in the annual report, that reduces information asymmetry

and enhances the companies' stock market liquidity, rather than the financial information from financial section. One plausible explanation is that the qualitative information, such as information on corporate strategy, competition and, outlook and future prospects sections, provides a guide to the future direction of the company. This information helps the financial intermediaries and the investors to forecast the potential of the company.

However, it is not possible to conclude that other categories of information disclosure, such as non-financial information, and the other channels of information and investors section, do not have an effect on the stock market liquidity. As can be seen from the results from model (1) in Table 8-14, the coefficient for the overall disclosure score that includes all categories of information disclosure is statistically significant. This may suggest that a combination of the categories of information disclosure provides additional and useful information for investors.

To summarise, the analysis and evidence for the second hypothesis suggests that the voluntary information disclosure in the strategic and the financial sections are the primary factors driving the mitigation of information asymmetry between managers and investors, and between informed and less informed investors in the capital market. Higher level of voluntary information disclosure in the strategic and financial sections, therefore, helps enhance companies' stock market liquidity. This result is interesting as it suggests that it is the qualitative information from the strategic section, rather than the voluntary information from financial section, that has most impact on the companies' stock market liquidity.

Hypothesis 3: Market liquidity and channels of information disclosure

By using the analysts rating approach it is possible to examine the differential impact of the public and the private channels of disclosure on stock market liquidity. For the third hypothesis, two sub-hypotheses are examined. The first sub-hypothesis explores the relationship between market liquidity and the analyst rating score varies between the channels of disclosure, while the second examines whether the private channel of disclosure has a higher effect on market liquidity than the public disclosure channel.

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The results provided in Table 8-16, show support to the first sub-hypothesis that both the public and private disclosure information from the analysts rating instrument have impact on the stock market liquidity. These results also indicate that only voluntary information disclosure from the public channel that can reduce information asymmetry and enhance the stock market liquidity. The empirical results do not show any evidence to support the second sub-hypothesis, because the coefficients indicate that voluntary information from public channel is more likely to have higher effect on the stock market liquidity than voluntary information from private channel.

It can be concluded that for these data in Thai context, voluntary information disclosure via the public channel, such as the company's annual report, rather than the private channel, is the primary factor in reducing the information asymmetry in the capital market and in improving the companies' stock market liquidity. This is consistent with many of the prior empirical findings in developed economies. For example, Healy, Hutton and Palepu (1999) found that increases in the disclosure rating are followed by increases in the stock market liquidity. Heflin, Shaw and Wild (2001) found that it is the quality of accounting information from the quarterly and other communications, rather than the private communications with analysts, that is useful in mitigating the risk of associated with informed traders and enhance market liquidity.

In short, the results in this study suggest that the relationship between the stock market liquidity and the channels of information disclosure are likely driven by the public disclosure channel. It is interesting as the result suggests that it is the public disclosure channel, rather than the private disclosure channel, that enhances market liquidity.

Hypothesis 4: The size of the audit firm and information disclosures

The fourth hypothesis is that the level of voluntary information disclosure by listed companies is positively associated with the size of the audit firm. The empirical results are considered for each of the research instruments used in this study separately.

The results provided in Table 8-17, models (11) – (16) for the disclosure index instrument, indicate that the level of voluntary information disclose in the annual report, strategic section, and financial sections is positively, and significantly related to the size of the audit firm. Similarly, models (17) – (18) for the analysts rating instrument, show that both voluntary disclosure via the public and private channels are significant and positively related to the size of the audit firm. This result supports the hypothesis that the audit firm size has an effect on the level of voluntary information disclosure. There are two interpretations of this finding. First, it is possible that those companies that are audited by large audit firms are encouraged by the audit firms to disclose more voluntary information, in particular information disclose in the annual report, strategy section, and financial section, and via both public and private channels. The alternative explanation is that those listed companies that are willing to disclose more voluntary information and are more likely to choose large/international audit firms.

These empirical results are consistent with previous studies. For example, Singhvi and Desai (1971), and Wallace and Naser (1995) find that the audit firm size is positively related to the disclosure level. Moreover, the results are consistent with the findings from the fifth theme in qualitative part of this study. As most of the financial intermediaries assert that the financial statements audited by larger audit firms are more credible than those audited by smaller firms.

However, since the analysts rating instrument is completed by the financial intermediaries, it should be noted that the disclosure ratings from this research instrument be biased by their views about the relationship between disclosure quality and audit firm size. It is therefore possible that financial intermediaries will rate the disclosure quality of companies audited by large/international audit firms higher than those companies audited by smaller firms.

In summary, the evidence supports the fourth hypothesis that there is a relationship between audit firm size disclosure; particularly in the annual report, and the strategic and the financial sections. There are two possible ways to explain this relationship. The first is that the large/international audit firms may encourage their clients (listed

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companies) to disclose more voluntary information. Alternatively, the good listed companies, who disclose more voluntary information, may choose large audit firms.

Hypothesis 5: Market liquidity and audit firm size

The fifth hypothesis examines the relationship between market liquidity and the size of the audit firm. This hypothesis is divided into two sub-hypotheses. The first sub-hypothesis is that stock market liquidity is positively related to audit firm size, while the second is that listed companies audited by Big Four audit firms are more likely to have higher market liquidity than the listed companies that audited by other audit firms.

The results for the fourth hypothesis show that the size of audit firm has a significant positive associated with the level of voluntary information disclosure. The results for the first, the second, and the third hypotheses show that the level of voluntary information disclosure is also significantly positively related to market liquidity. The results for H1, H2, H3, and H4 suggest that there should be a relationship between the audit firm size and the market liquidity.

The results for the fifth hypothesis, in Table 8-18 and 8-19 do not provide support the first sub-hypothesis (H5$_a$), as there is no statistically significant difference in the stock market liquidity between the listed companies that audited by Big Four audit firms and the listed companies audited by Non-Big Four audit firms. The empirical results, therefore, do not support the first sub-hypothesis of the fifth hypothesis (H5$_a$). One possible explanation for the difference between the companies audited by Big Four and Non-Big Four not being significant, which consistent with the findings from the fifth theme in the qualitative part, is that investors believe that all audit firms that are licensed by the SEC meet the minimum requirement of the SEC and so provide appropriate audit services. Another possible explanation may be the skewness of the sample in this study.

The results provides in Table 8-20, also indicate that there is no significant relationship between the stock market liquidity and the audit firm size for this current

data set, although the coefficients are in the predicted direction. An explanation for this may because the audit firm size also has an impact on the disclosure score, as the results show in the fourth hypothesis. Thus, when both variables, audit firm size and the disclosure score, are included in the same model, it is possible that the audit firm size is dominated by the disclosure score.

In summary, this empirical evidence is that while companies audited by Big Four firms are likely to have higher market liquidity than companies audited by the other audit firms, the results are not statistically significant.

Hypothesis 6: Analysts following and information disclosure

The sixth hypothesis is that there is a positive relationship between the number of financial analysts following a company and the level of disclosure. The empirical results for the sixth hypothesis are considered separately for the two research instruments.

For the disclosure index instrument, the results shown in Table 8-21, models (28) – (33), indicate that the overall score for voluntary information disclosure, voluntary information in the annual report, voluntary information disclosure of strategic section, voluntary information disclosure of non-financial section, and the channels of information and investor section are significant and positively related to the number of the analysts following the companies. One explanation for this is that the number of analysts following the companies affects the level of voluntary information disclosure. Alternatively, it may be that when the companies disclose more voluntary information, in particular for the overall disclosure, information in the annual report, the strategic section, non-financial section, and the other channels of information and investor relation section, the number of the analysts following the companies increase. Thus, from these empirical results it is possible to conclude that not all sections of information disclosure from the annual report are of equal importance to financial intermediaries.

For the analysts rating instrument, the results presented in Table 8-21, models (34) – (35), show that voluntary disclosure via the public and private channels, is significantly, and positively, related to the number of analysts following the companies. This evidence again suggests that the level of voluntary information has an effect on the number of analysts following the companies. This can be interpreted as indicating that higher levels of voluntary information disclosure via both public and private channels encourage analysts to follow the companies. As stated earlier, because the analyst rating instrument is a subjective measurement approach, the disclosure ratings from this research instrument may biased. As can be seen from Table 8-12, both public and private disclosures reveal very high correlation with the number of analysts following the companies. Therefore, it is more likely that the analysts will give a higher rating to the companies that they are following.

These empirical results are consistent with previous studies. Lang and Lundholm (1996) found evidence that the analysts are attracted to companies that disclose more information. Hope (2003) found that analyst coverage is positively related to the overall disclosure score, and the results also indicated that not all forms of disclosure are equally important to the financial analysts. Specifically, Hope (2003) found evidence that the analysts following is more strongly related to the extent of note disclosure than to the comprehensiveness of the basic financial statements. Moreover, these results are consistent with the findings from the fourth theme in qualitative part of this study. As some of Thai securities analysts and fund managers indicated that they prefer qualitative information which provides a guide the direction for the future of companies, rather than to the quantitative information. Some of the interviewees also asserted that the most useful parts in the annual report are those sections containing qualitative information because they can obtain the quantitative information and some financial information from other sources before they receive the annual report.

In addition, the empirical results indicate that the number of analysts following companies is associated with company size. As can be seen from the results in Table 8-21, the coefficient of the company size is positive, which suggests that company size is an important determinant of analysts following. This is consistent with the empirical results from the previous studies carried out in different context, such as Lang and

Lundholm (1996) in the U.S., Hope (2003) in the international context, and Lakhal (2007) in France. Furthermore, it is possible to conclude from these results that the securities analysts are more likely to follow large companies because these companies offer better disclosure policies and disclose more voluntary information than smaller companies. This is also consistent with the findings from the qualitative part. As the securities analysts indicated that the quality and the level of information disclosure is associated with the company size, asserting that large listed companies usually disclose information in excess of the SET's requirements, while the smaller listed companies disclose at the minimum or standard requirements.

As a conclusion, the evidence supports the sixth hypothesis that level of voluntary information disclosure is associated with analyst following, particularly the overall disclosure score, the information from annual report, strategic section, non-financial section, and information from the other channels of information and investor relation section. The empirical results also indicated that company size is associated with analysts following. There are two possible explanations for the results: (i) higher levels of voluntary information lead to higher analysts following; or (ii) larger analyst following leads to more voluntary disclosure.

9.5 Contributions of the study to the literature

The study contributes to the corporate disclosure literature through developments in methodology and theory, and through the empirical results.

Methodological contributions

This study contributes to the methodology by being the first study to use a mixed method design to examine the relationship between the level of voluntary information disclosure, the stock market liquidity, auditor quality, and analyst following. Specifically, the study applied a two-phase exploratory design meaning that it is divided into two mains parts.

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The research findings from the qualitative part of the study help the researcher to scope the conceptual framework for the quantitative study and to develop appropriate research instruments. In this study, two appropriate research instruments, a disclosure checklist instrument and a questionnaire survey for the analysts rating instrument, for Thai listed companies were developed and employed. Moreover, the research findings also indicate new variables that may be related to voluntary disclosure and stock market liquidity. These are incorporated into the conceptual framework for the second phase of the study. Additionally, the findings from qualitative method phase also help to explain the empirical results from the quantitative method phase.

This study also contributed to the literature on corporate disclosure, especially to the Thai literature, by using two approaches to measuring disclosure quality, the disclosure index and the analysts rating. The benefit of using two research instruments is that it enables an assessment of the validity of the research instruments and so increase a confidence on the results.

Finally, this study added to the disclosure literature in emerging market, in particular to Thai capital market, by developing a disclosure checklist and an analyst rating score.

Theoretical and empirical contributions

The research findings and empirical results from both qualitative and quantitative parts contribute to the literature in the area of corporate disclosure, especially for emerging economies like Thailand, by providing a greater understanding on the use of information by Thai financial intermediaries and further evidence on how the level of voluntary information disclosure affects stock market liquidity. As stated earlier, most studies on corporate disclosure are conducted in the developed economies. This study, therefore, offers a contribution to the literature by extending the scope of enquiry to an emerging economy, Thailand. The empirical results indicate that disclosing more voluntary information, particularly through public disclosure, reduces information asymmetry, improves investor confidence and enhances the stock market liquidity. These results are, therefore, consistent with the other results from previous studies conducted in developed countries which have difference institutional setting.

The major theoretical and empirical contributions of this study are summarised in turn as follows:

Market liquidity, information disclosures, categories of information disclosures, and channels of information disclosures

The empirical results from the benchmark test, Hypothesis 1, of this study contribute to the literature by showing that levels of voluntary information disclosure are associated with the liquidity of the disclosing company's shares. This may be interpreted as demonstrating that by reducing information asymmetry, both between managers and outside investors, and between investors, listed companies improve investor confidence, which in turn, enhances the market liquidity of their shares.

The empirical results for Hypothesis 2 have implications for an understanding of how different sections of the annual report affect stock market liquidity. Specifically, the results indicate that the information from the strategic information section and the information from the financial section of the annual report are the main factors that impact on the stock market liquidity. The results demonstrate that the voluntary information disclosed in the strategic section has the greatest impact on stock market liquidity, while the information in the financial section has the next level of impact. It is possible to conclude from this evidence that the qualitative information, which provides a guide to the future direction of the company, has an impact on the information asymmetry between the market participants and so on stock market liquidity.

The findings also have implications for an understanding of how the private and public disclosure channels affect stock market liquidity. The results for Hypothesis 3 indicate that it is the public voluntary information available to all investors, particularly the information disclose in the annual report, rather than the management's private communications with the financial intermediaries, that enhances stock market liquidity. One possible explanation for these results is that the public disclosure is available for all market participants, and so reduces not only the information asymmetry between managers and outside investors, but also between

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different groups of investors. On the other hand, private disclosure benefits one group of investors, such as the financial analysts and inside investors, against others. This finding lends support to information asymmetry theory in that it is public disclosure, rather than the private disclosure, that mitigates the information asymmetry between the market participants and improves the stock market liquidity.

These findings for Hypothesis 1, 2, and 3 have implications for both listed companies and accounting regulators.

The results provide strong evidence on those sections of the annual report that have an impact on stock market liquidity. If listed companies focus on improving the voluntary information disclosure, in particular of strategic and financial information, they may improve investor confidence and increase the liquidity of their shares. These findings should also be of benefit to accounting regulators, in particular on the importance of certain types of qualitative information to stock market liquidity.

Audit firm size and information disclosure

The empirical results for Hypothesis 4 should be benefit for the listed companies when they are choosing an audit firm. The results indicate that there is a significant and positive relationship between the audit firm size and the level of voluntary information disclosures. It may be that by choosing a large/international audit firm, companies may be encouraged to disclosure more information. Listed companies, by providing more information, may increase investors confidence and attract more investors' attention, which in turn, leads to higher market liquidity.

The size of audit firm, and market liquidity

The results for Hypothesis 5 indicate that there is no significant relationship between the audit firm size and the market liquidity. This is consistent with the views of some of the securities analysts and fund managers that the size of audit firm does not matter as all audit firms meet the minimum requirements of the SEC, which are sufficient to ensure audit quality.

Analysts following and information disclosures

The empirical results for Hypothesis 6 should be benefit for the listed companies. In the context of the capital markets, the financial analysts are the most important information intermediaries, as they serve to increase the credibility of the issuer disclosure (listed companies) and to overcome the investors' uncertainty. Therefore, listed companies should benefit from knowing: what type of information financial analysts are interested in; and the impact of disclosure on the analysts following.

As the results report that not all sections of information disclosure are related to the size of analyst following. The empirical evidence indicates that higher levels of voluntary information disclosure, particularly the overall disclosure score, information from the strategic and information the other channels of information and investor relations sections, have an important impact on the number of analysts following companies. Therefore, if the listed companies improve and disclose more voluntary information in particular sections, it is possible that they will attract a large analysts following.

9.6 Limitations and suggestions for future research

This study based on the voluntary disclosure data of the listed companies from the SET 100 index. This limitation may restrict the generalisability of the findings to only those top listed companies included in the SET 100 index. Thus, to complement the arguments provided by this study, future research in this area may increase the sample size in order to discover whether the results are restricted to the top listed companies or are general to all listed companies. Such a study may compare companies in the SET 100 index with other listed companies to see if there are differences.

In Thailand, most listed companies have concentrated ownership structures with family members owning a significant proportion of the outstanding shares. The concentrated ownership may have a significant effect on stock liquidity, especially as reflected in the bid-ask spread. A future study may include share ownership structure as a variable.

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Appendices

Appendix A: Interview schedule

Appendix B: The summary of open and axial codes

- List of open categories and the related open concepts

- List of main categories and the related core open concepts

- The summary of the final coding analysis: open and axial codes

Appendix C: The analytical of open coding and axial coding

Appendix D: Disclosure index

Appendix E: Questionnaire survey

Appendix F: Selection criteria for companies to be in the SET 100 Index

Appendix G: Important statistical assumptions of multivariate analysis

Appendix H: Insider trading cases in Thailand

Appendix I: Further analysis

Appendix A: Interview schedule

Interview Schedule

- Semi-structured interviews
- Specific questions will be drawn from this list depending on the particular interviewee

Background questions:

- Name
- Gender
- Age
- Education
- Company

Questions about source of information:

- Could you please read this list all through, and then tell me which sources of information that you currently use.
- Which sources of information are important when you analyses companies

Questions about disclosure and the quality of disclosure:

- What do you understand about disclosure
- What is the objective of disclosure
- What did you understand about good disclosure characteristic, is its effect on pricing

Questions about voluntary disclosure:

- What do you think about voluntary disclosure
- Does voluntary disclosure enhances the value of the annual report

Questions about information:

- Does type of the information (qualitative and quantitative) effect when you analyses companies
- Which sections of the annual report do you consider when analyses companies, and which one is the most important section.

Questions about auditor:

- Is the audit important
- Whether or not auditors significantly enhance the credibility of reported financial statements
- Is the reputation of the audit firm or auditor associate with listed company disclosure in order to value added to the annual report

Appendix B: The summary of open and axial codes

List of open categories and the related open concepts

Theme I: Sources and channels of information disclosure

Private disclosure
    Annual report
        Advantage of annual report
            Study in detail
        Limitation of annual report
            Not up-to-date
            One way communication
Public disclosure
    Personal contact
        Advantage of personal contact
            In-depth information and clearly understand
            Acquire top executive's vision
            Two way communication
        Limitation of personal contact
            Individual skill of the audiences
    IR department
        Advantage of IR department
            In-depth information
    The familiar of analysts and top manager
        Dose it cause familiarity problem
        How to prevent familiarity problem

Theme II: Disclosure and the quality of disclosure

Disclosure definition and objective
        Advertise and manipulate their stock
        Channels of monitoring performance
        Concerned with many people
        Good image and value added
        Mandatory
        Provide benefit information
            Information for investment purposes
        Transparency
Good characteristics
        Accurately, truly, reliability and clearly
        Assign the company's speaker
        Disclose the information regularly and timely
        Equally for all investors
        Relevant and adequate information
        Provide obviously channels of disclosure
        Follow the requirement (Mandatory)
        Transparency
        Neutral
Factor related to quality of disclosure
    Regulator
    Listed company itself
        Large company
        Medium and small company

Disclosure and the information asymmetry
The effect of disclosure on stock pricing
> Good disclosure
> Transparent disclosure

Theme III: Voluntary disclosure

The reason of engage in voluntary disclosure

> Advertise the company
> Improve their transparency
> Lift up the quality
> Increase the company value and restore investor confidence
> Increase the stock premium

Voluntary disclosure enhances the value of the annual report
The limitation of the voluntary disclosure
> Too much and too complicate information
> Solution for the problem
> > Form IR department
> > Give additional information to the right person

Theme IV: Type of information and section in the annual report

Type of information

> Qualitative information
> Quantitative information

Most preference section in the annual report
> Section related to qualitative information
> > Acquire the executive's view / the company's future direction

Theme V: Auditor and the credibility of the annual report

The important of auditor and the credibility of annual report

Auditor reputation and the credibility of the annual report
> More reliability and confident
> Scarcely doubt about the accuracy

The auditor reputation and the share price

List of main categories and the related core open concepts

	Main categories		Related core open categories
1.	Sources and channels of information disclosure	1.1 1.2	Private disclosure Public disclosure
2.	Disclosure and the quality of disclosure	2.1 2.2 2.3 2.4 2.5	Disclosure definition and objective Characteristics of good disclosure Factor related to quality of disclosure Disclosure and the information asymmetry The effect of disclosure on stock pricing
3.	Voluntary disclosure	3.1 3.2 3.3	The reason to disclose voluntary Voluntary disclosure enhances the value of the annual report The limitation of the voluntary disclosure
4.	Type of information and section in the annual report	4.1 4.2	Type of information Most preference section in the annual report
5.	Auditor and the credibility of the annual report	5.1 5.2 5.3	The important of auditor and the credibility of annual report Auditor reputation and the credibility of the annual report The auditor reputation and the share price

The summary of the final coding analysis: open and axial codes

Theme I: Sources and channels of information

Brief descriptions of categories	Open codes	Axial codes
The interviewees identified private disclosure sources which they use when analyses the company	Private disclosure	Sources and channels of information disclosure
The interviewees' perceptions of the advantage of annual report		
The interviewees' perceptions of the limitation of the annual report		
The interviewees identified public disclosure sources which they use when analysing the company	Public disclosure	
The interviewees' perceptions of the advantage of personal contact		
The interviewees' perceptions of the limitation of personal contact		
The interviewees' perceptions of the advantage of IR department		
Perceived the familiarity of analysts and top manager		

Theme II: Disclosure and the quality of disclosure

Brief descriptions of categories	Open codes	Axial codes
Meanings associated with disclosure by the interviewees	Disclosure definition and objective	
The interviewees' perceptions about the objectives of disclosure		
Perceptions of characteristics of good disclosure	Good characteristics of disclosure	
Factor perceived to related to quality of disclosure	Factor related to quality of disclosure	Disclosure and the quality of disclosure
The interviewees' perceptions of the relationship between disclosure and the information asymmetry	Disclosure and the information asymmetry	
Impact of disclosure on stock pricing of interviewees	The effect of disclosure on stock pricing	

Theme III: Voluntary disclosure

Brief descriptions of categories	Open codes	Axial codes
The reasons for voluntary disclosure given by interviewees	The reason to disclose voluntary	
The interviewees' perceptions of voluntary disclosure and the credibility of the annual report	Voluntary disclosure enhances the value of the annual report	Voluntary disclosure
Perceived limitation of voluntary disclosure	The limitation of voluntary disclosure	

Theme VI: Type of information and section in the annual report

Brief descriptions of categories	Open codes	Axial codes
Type of information disclosure given by the interviewees	Type of information	Type of information and section in the annual report
The interviewees' referenced section in the annual report	Most referenced section in the annual report	

Theme V: Auditor and the credibility of the annual report

Brief descriptions of categories	Open codes	Axial codes
Perceived importance of audit	The importance of auditor and the credibility of annual report	
Perceived importance of auditor in enhancing the value of the annual report		
The interviewees' perceptions of auditor reputation and the credibility of the annual report	Auditor reputation and the credibility of the annual report	Auditor and the credibility of the annual report
The interviewees' perceptions of the relationship between auditor reputation and the share price	The auditor reputation and the share price	

Appendix C: The analytical of open coding and axial coding

Theme I: Sources and channels of information

From the interviews, most of the interviewees stated that there are two main sources of information which they used. The first source of information is public disclosure which comes from the annual report and the corporate financial statements. Another source of information is private disclosure which come from personal contact with the listed company such as an interviewing the company top executives, telephone, company visit and contact company's IR department. Both sources of information are often used by the interviewees because they are convinced that this information come from the reliable source.

> In case A: *'There are two main sources that I use in analyzing the company; corporate financial statements, and an interviewing the company's top executives. Both sources of information come from the credible source, because we get it directly from the company not from other people. For financial statements, they are verified by auditor before they announce to public as public information. For the part of chief executive officer (CEO) interviewing, either the president or chief financial officer (CFO) will give their point of view about the company and the overview of the industry as a whole. Therefore, both sources of information are very important.'* (Securities analyst)

Private disclosure

Private disclosure is one of the most important sources of information that the interviewees usually used for making a decision. The interviewees defined that private disclosure means personal contact between them and the company. For example, interviewing the company's top executive, telephone, company visit or even when they contact the company's IR department. Most interviewees asserted that private disclosure is their preference channel of receiving information from the company because it is two ways communication which allow them to understand the company clearly. One of the interviewees informed that

> In case A: *'To get direct information from the company is very useful and is as important as the company information present in the media. That is why the companies always have road show. The listed companies organize the road show in order to arrange the meeting between the investors and the companies' executive. The company executive take this*

opportunity to inform the investor all about what they need to know such as, the direction of the company and how the company operate under these circumstances, high competition, fluctuated currency value, increasing in oil price, more competitor from abroad and so on.' (Securities analyst)

Personal contact

The channels which the interviewees can receive the information directly from the company, such as, company visiting and shareholders meeting. Most interviewees prefer this channel because they could acquire more in-depth information which they cannot find out from the papers or the annual report. The information from this source usually provided by the company's top management, therefore it is the good opportunity for the interviewees to ask some strategy questions or some important questions which they cannot find the answer from the annual report.

Advantage of personal contact

- **In-depth information and clearly understand**

  The first advantage of personal contact is that these sources of information give the interviewees considerable in-depth information. Therefore, it helps them to achieve a better understanding about the company

  In case F: *'From the personal contact we can ask the strategic questions, the questions about the direction of the companies in the future, or some questions about pricing their products, and etc.'* (Fund manager)

  One of the interviewees stated that personal contact allows them to understand the company clearly, even though they acquire the same information which they can find from the public.

  In case E: *'When I do the company visit and meeting with the company's top manager, they will give me the same information that they provide for the public. Even though it is the same information (as they disclose to public), it is better, because I can ask them some questions about what I do not understand clearly.'* (Fund manager)

- **Acquire top executive's vision**

  The information from the personal contact is different from the narative information or financial statements that the company discloses. One of the analysts informed that from the personal contact they get the top executives' vision, the company's problems and the way how the company top executive

plan to solve the problems. This information is important and they can also use it when they evaluate the company top executive performance. Moreover, there is support from fund manager side

In case F: *'For general information, we can easily acquire it, but that information did not indicate anything about the direction of the companies in the future. Due to, an investment is based on the future, therefore the personal contact will be more useful than the information from the annual report.'* (Fund manager)

- **Two ways communication**

   Another, advantage of the personal contact is two-way communication. When they have any doubt questions; they can ask directly the company's top management and be able to get an immediate answer. Moreover, they can raise questions or when the companies' top executives answer their questions, they can observe the companies' top executives re-action and evaluate them. This allows them to obtain in a clearer and more accurate understanding of the company.

Limitation of personal contact

Even though there are several advantages of the personal contact, but it would be useless for anyone who has no experience, since they could not catch any important information which affects the company risk.

In case I: *'For the company visiting, if the audience has no experience, they will not catch any important information. There, we will meet the company's top manager who would announce only the good things about the company and sometimes we will meet the analysts who try to find out from the company's executives where the numerical (numbers) come from; meanwhile the company's top manager could not answer those questions It seems like we did not get any information from the company visiting.'* (Fund manager)

Investor Relation (IR) department

Most interviewees asserted that IR department is one of the important sources of information, especially in the special industries which have very complicate products or services. In Thailand, only a few listed companies have an IR department, because setting up the IR department is expensive.

Advantage of IR department

The interviewees prefer this channel of information because they can acquire in-depth information of the company. Moreover, they indicated that this channel of information would be very useful for the individual investors.

> In case F: *'The information that the investor relations departments provide are quite in-depth, especially in the industry which their products quite complicated such as petrochemical or whatever they are specialist. Therefore, IR department is very benefit for us.'*
>
> *'........If we talk about general companies, where their products or services are not too complicate, their IR department might be very useful for individual investors but not for me because I am an institutional investor with lots of data and be able to access from many source of information. In contrast, the companies where their products are complicated, the IR department would be very useful and dependable (for me and every one) since the analysts can hardly understand them.'*
> (Fund manager)

Other private sources of information

Besides personal contact and the IR department, analyst meetings are perceived as the other private source of information that the interviewees usually used for making a decision. The interviewees argued that this part is not differ from an interviewing the company top executive, the only thing is the format chosen, either one by one or one by others analysts.

The personal relationships between analysts and top management

Personal contact is one of the private disclosure channels, which the analysts/fund managers used when they need some more information from the company. They have the opportunity to contact the company's top management in person and ask for the additional information, which could leads to personal relationships between analysts/fund managers and top manager. Therefore, this question 'Assuming some analysts/fund managers familiar with top manager, would it be possible that the analysts/fund managers will receive more information than the other?' were asked, and the interviewees replied that

> In case A: *'An individual familiarity would be possible. However, it depends on top manager of the listed companies, they should know how much they can disclose and they should have professional ethics. In my view, of course the analysts who have been working in this career for a long period of time have more opportunity to contact with many top managers than analysts who just started their career. Therefore, top*

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managers should be aware of how much the information should be disclosed.' (Securities analyst)

In case D: *'Uhmm... it is partly possible. Actually, there is SET laws which has already coped this problem. Although some of the analysts get more information than the others, I do not think that they can use or get benefit form that insider information.'* (Securities analyst)

However, some interviewees suggested that if the companies have good disclosure format, for example, provide the analysts with a fact sheet or an information book which update all the time. Whenever the analysts/fund managers visit the companies, the companies will give analysts/fund managers these fact sheets or make slide presentations to provide an overview of the companies. Consequently, everybody will receive the same and equal information; therefore there is no problem about personal relationships between analysts/fund managers and top management.

Public disclosure

Public disclosures come from a variety of sources including through form 56-1, the annual report, and company's website. These secondary data is very important because most interviewees asserted that they have to study them very carefully before taking a company visit.

In case C: *'Those channels of information (the annual report, financial statements, or the company's website) are suitable for raw data which enable us to study before asking some in-depth questions.* (Securities analyst)

Annual report

Annual report is the raw data which the interviewees indicated that they usually use.

Advantage of annual report

- **Study in detail**

  The annual report is important for the interviewees. Most of them stated that before they participate in the company visit or conduct an interview with companies' top executives; they have to study the companies' details thoroughly in order to formulate others in-depth questions.

In case B: *'The annual report is the necessary condition and it's a must for everyone to look at. Every time I do a company visit, I will study the annual report thoroughly.*

'........The reason is that the questions we ask during the company visit are not about the numbers as we can find out all that information from the papers. Therefore, we have to prepare ourselves to be ready before we meet the companies' top executive, at least 90 percent, and ask them more about the company direction and overall.' (Securities analyst)

Limitation of annual report

- **Not up-to-date**

Most interviewees indicated that the annual report is delay in publication. Therefore, they are looking for the other source of information which the companies also disclose for the Sock Exchange of Thailand such as the information from an online SETSMART (SET Market Analysis and Reporting Tool) and form 56-1.

In case F: *'I seldom used the information from annual report because of its delay and not up-to-date. We have to wait for the annual report to be prepared for almost three months after the closing date, whiles we can have the financial statements soon after its disclosed as an online financial statements on the Stock Exchange of Thailand website.'*

'.....Uhmm... For me, the annual report is nothing, because there is quite a delay. I do not mean that the annual reports have no information, but it takes a long period of time before we get the annual reports. When we get it, we already knew all of the information which it contains. Actually, the top executives prepared the annual report since the end of the year, but kept it for and announcement in April of the following year. During this period, we have a chance to meet the top executive and we can acquire up to date information, so the annual report becomes just like the library for us to search the past, the history, and the development of the company. We did not use the annual report as the information for making a decision of buy or sell the stock, because this information is quite out of date.'

'.....Uhmm... It does not mean that we did not pay any attention to the annual report but because we can access most information before we have the annual report. Therefore, I just look at... Uhmm... the section of corporate governance, audit committee report, nominating committee report, and risk management committee report. I pay attention on these sections in the annual report. If you asked about the important information in the annual report, I would say that all of the financial data are very important. Since we already have this fact before the annual report be present and we couldn't wait that long, so most of the time we obtained the financial data from the website not directly from

the annual report. For example, in some situations if we have to wait for the information in the annual report until the following April, at that time the overall situation or figure might be changed already.'
(Fund manager)

- **One way communication**

  Another limitation of the annual report is because of its one way communication.

  In case G: *'...the information disclosed via the public media seemed to be well arranged and it is one-way communication. This channel might not be good channel since we are probably missed some good information. For instance, if we have some questions, we might be allowed to ask them (the company) through email. The answers, which of course are in letters, might not express their views or opinions, whilst two way communications would fulfil the need of getting better information.'* (Fund manager)

  Other public sources of information

Besides the annual report, there are some other public sources of information that the interviewees usually used when making a decision. Those sources of information are:

- **Company presentations of the preliminary and interim results;** the interviewees indicated that this part will link with annual report and interim. Some companies provide explanations, whilst others do not explain.

- **Preliminary profit announcements;** the interviewees stated that they also use this source but keep watching the numbers active, because there is quite few in Thailand.

- **Trade journals;** analysts asserted that there are very few in-depth analyses of industries in Thailand. Most of the commercial banks in Thailand do the in-depth analysis by themselves. An example from fund manager side is

  'We did not directly used information from trade journals since we are a mutual fund and got some good analytics services from the brokers. These analytic reports by brokers were prepared from many sources of information including trade journals, though we did not directly used information from trade journals but it was indirectly informed in that research.' (Fund manager)

- **Other analysts;** almost all the interviewees asserted that they normally refer to international analysts who have a broader point of view than local analysts.

Most international analysts view the whole sector, like viewing the whole region for petrochemical, focusing the whole sector of shipping transport while local analysts have a narrow focus.

In case G: *'For analyzed data I usually use the information from brokers, both domestic and international brokers. Uhmm…. Seemingly, the information from international brokers has more quality than from domestic brokers; the reason is that international brokers have to serve their information to international investors who are more professional. Whenever they look on the financial data, they use the same pattern such as financial ratios and the companies' characteristics.'* (Fund manager)

- **Datastream online database;** for analysts side, they stated that this is quite essential and most of them are already have it, while some fund managers indicated that they did not use the Datastream because their company did not have this program. However, most brokers use Datastream, so they can get it indirectly from the brokers' analyses.

- **Annual General Meeting (AGM);** few interviewees stated that they acquire the important information from the annual general meeting.

In case I: *'From the shareholders meeting we usually get more important information because the company's top manager (top executive) would attend the meeting and have to present the company's view. It's happened sometimes that they have to give some additional information, for example, the company's top management has to ask the shareholders for the right to issue a company bond. If we wonder why they have to issue the bond, e.g. does the company have enough working capital, the top executive should be able to explain the reason why. If the explanation does not sound reasonable, the shareholders will ask more questions. That means we will get more information.'* (Fund manager)

On the other hand, some interviewees argued that they did not get in-depth information from the annual general meeting. For example

In case F: *'I rarely use the information from this source because we did not get adequate information from the Annual General Meeting (AGM). In AGM there are many investors attending, thus we scarcely get in-depth information. Therefore, we attend the AGM in order to protect our rights rather than get some information for analysis.'* (Fund manager)

- **Market news;** one analysts stated that

In case A: *'I, myself, rarely use the information from the newspapers due to the lack of creditability and the lack of guarantee for its accuracy. It does not assist for analysis but it might help in informing the mass communication's mood. Some people might see the important role of using technical analysis in determines the timing for buying or selling*

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the stock, they sometimes using the graphs as part of the information. The most important thing for sources of information is the fundamental or facts should be primarily consideration.' (Securities analyst)

Theme II: Disclosure and the quality of disclosure

The second theme is about disclosure and the quality of disclosure. In this theme, there were five following subsections of connected theme including definition and objective of disclosure, good characteristics of disclosure, factor related to quality of disclosure, disclosure and information asymmetry, and the effect of disclosure on stock pricing, as shown in Figure 5-6.
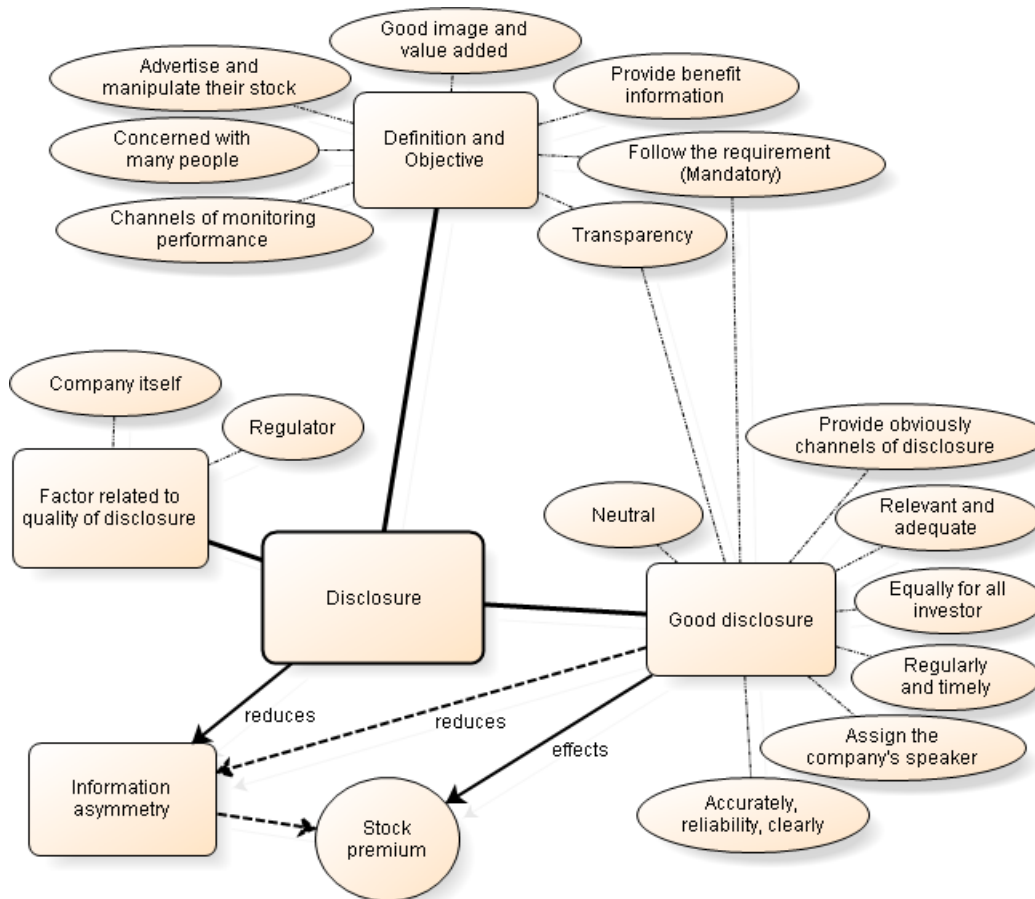
Figure C-6 Sub-model of disclosure and the quality of disclosure

Disclosure definition and objective

The interviewees argued that there are several reasons why a company discloses more information;

- **Advertise and manipulate their stock;** the interviewees stated that the company may disclose information because it has some other hidden objectives; such as to promote their share price.

  In case B: *'Some companies want to manipulate their stock, so they will disclose only the good news.'* (Securities analyst)

  In case G: *'Anyway, sometimes listed companies disclose their information such as the information which has an effect on the company performance, stock pricing, or many people because they have some hidden reasons.'* (Fund manager)

- **Channels of monitoring performance;** the information disclosure is an important mechanism for shareholders to use it as a channel for monitoring the executives' performance and the companies' operation as performance. Therefore, the information disclosed by the companies should be clear, accurate reliable and timely.

- **Good image and value added;** the companies disclose their information so as to increase their value. Whenever listed companies represent the good image for the investors, there will be an increase in their stock premium.

- **Mandatory;** another objective why the company disclose their information is because of the SET requirements.

- **Provide benefit information;** the company discloses information because they want to provide some benefit information to the investors.

  In case B: *'From the analysts' aspect, the disclosure helped us to understand the company's main points and their profitability. There are varieties of disclosure formats, for example the one which was required to disclose or voluntary disclosure about the fact of going concern. The most important thing is that the companies' top executives should have an ethic in disclosing the information.'* (Securities analyst)

  In case F: *'Uhmm...the definition... is that the providers should provide the information that is benefit for an investment, not only post the news about what you did , but should give adequate details of those information for the investors to analyses. For example, assume that company A announced the news about their taking over company B but did not give any further information. This means that company A*

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followed the minimum requirement by SET, not disclosure. Disclosure means to disclose all information which has some materiality and relevance to decision making or affect on stock pricing. What to disclose is about things that happened, why it happens and its effect on the investors. Moreover, you should disclose all the information timely and fairly to everyone in order to protect all investors from some group of people who can access and acquire the benefit from this information before public.' (Fund manager)

- **Transparency;** information disclosure and transparency.

In case A: *'For the transparency of the company itself. It is very important, if the investors believe that the company has transparency, be honest and discloses adequate information for the public to be able to analyze with no doubt. For instance, the company discloses margin, company growth or the explanation for the poor operating, performance etc. This will restore the investor credibility and the understanding of the company's direction. Since it is not possible for the company to meet the investors or analysts all time, the transparent public disclosure will answer questions, at least 80%-90%, and enable both investors and analysts to analyze more easily.'* (Securities analyst)

In case F: *'Disclosure seemed like the transparency of the companies because the investors are the stake holders of the companies. Therefore, they should have the right to know the direction and the progress of the companies. The important thing is that the companies should fairly disclose for everybody and it should have a good disclosure system.'* (Fund manager)

Good disclosure characteristics

The interviewees indicated that there are several characteristics of good disclosure;

- **Accurately, truthfully, reliably and clearly;** most interviewees stated that the companies with good information disclosure should disclose their information clearly, accurately, reliably and truthfully.

- **Assign the company's speaker;** the interviewee from fund manager side indicated that

In case I: *'Good disclosure characteristic... Uhmm.... If we are talking about information other than that which is disclosed in the stock market, actually, there is no one endorses that information, sometimes they are from IR department and sometimes they are from the company's top management. Some companies do not formally assign who should be the company's speaker. For instance, if I want the information about marketing, I will make a phone call directly to interview the company's*

marketing executive. If I want to know about financial information, I will call CFO.

'...If it is an ideal company with good disclosure characteristic, I think the company should assign the company's speaker which has similar characteristic to the IR department. From this speaker, we would get the reliable information which comes from the same source of information as from the company. That is what we want.'

However, I do not require that the companies should have such a speaker. As I stated above, we visit the companies, but we did not believe all of the information which they give us. For the companies which we used to investing, we tried to investigate whether their top managers were able to do the thing they had promised in the past or not. This would be the record of that companies' top managers and if we regularly invest (in the SET), we would be able to black list some of those companies' managers. We could mention that any of those managers who would never be able to do what they said and sometimes they just said in order to promote their share price. Therefore, the market mechanism will be the thing which rechecks itself. If asking whether it is necessary or not that the company's assign speaker, the answer will be "not necessary", but asking about our need, the answer will be "yes".' (Fund manager)

- **Regular and timely;** the interviewees asserted that the company that perceived as doing a good job of disclosing financial information to investors should disclose the information regularly and timely. Moreover, they should disclose both good and bad news.

  In case A: *'The most important thing is the companies should disclose the information regularly. Moreover, the companies should disclose both bad and good news. Some companies disclose only good news and avoid explanation of the bad news, while other companies explain everything that happens to the companies every quarter.'*

  '....Regular disclosure is quite difficult. After the companies disclose the information they should prepare to answer the following questions. For instance, if the companies have good operation of performance the investors will ask the question why the companies pay the small dividend, or when the companies do not operate as well as they should, the investors will ask for the reason.'

  '....the CEO should meet and supply some fact sheets to the investors and the journalists for the clear understanding about the companies, and for accurate news.' (Securities analyst)

- **Equally for all investor;** the companies with good disclosure should treat all investors equally in order not to give some advantage to some investors.

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- **Relevant and adequate;** the interviewees indicated that the companies which are doing good job in disclosure should disclose adequate and relevant information to investors.

  In case A: *'Companies should disclose adequate and relevant information to investors. Full disclose may be harmful to the company. For example, if the companies disclose their customer name list or their export market share, the companies may loose. Thus, they should disclose the information in an appropriate level.'* (Securities analyst)

  In case B: *'Mention about good disclosures, I think the companies should disclose appropriate information, not too much and not too little, in order not to mislead the investor.'* (Securities analyst)

- **Provide obviously channels of disclosure;** a company with a good disclosure system should provide a convenient and easy channel of accessing information for all investors to search for additional information; such as company website to search for the previous financial statements and annual reports.

  In case F: *'Uhmm... the companies should obviously have channels for their disclosure. It means that if something happens to the company the investors will know which channels they can follow up and check the companies' news besides the channels that the companies use under the SET mandatory. The examples are the IR department or the companies' website for the investors to follow up the news. The obvious channels of disclosure will be very helpful for the investors especially for those who did not invest in that company or did not follow up the companies' news for a long time. Supposing that these investors want to reinvest in that company, they should be able to know the company's disclosure system, the way the companies disclose their information.'* (Fund manager)

- **Follow the requirement (Mandatory);** most of the interviewees stated that the information that the company discloses should meet the requirements of SET.

  In case G: *'In my point of view, good disclosure characteristic means the companies should follow the SET disclosure requirements and they should disclose both the good and bad sides of the company. Some companies will disclose only the good sides in order to advertise themselves.'* (Fund manager)

- **Transparency;** a company with a good disclosure should be transparent.

- **Neutral;** the company that doing good job in disclosure should disclose information without bias.

Factor related to quality of disclosure

Although there are several factors that are related to the quality of disclosure, the interviewees indicated only two main important factors which affect both the quality and the level of disclosure.

The regulator; most interviewees asserted that the more the regulators strict with the listed companies, the higher the disclosure quality. Consequently, the listed companies will have the same standard.

> In case A: '.....*for example, the commercial banks are under the Bank of Thailand control, therefore the commercial banks have to disclosure the information according to the regulations that are set up by the Bank of Thailand. These regulations force the commercial banks to give more details and a higher level of disclosure.'* (Securities analyst)

However, some companies have no regulatory control, but they also provide good quality of disclosure.

> In case A: '.... *some companies had no regulatory control like PTT Chemical Public Company Listed, or Advanced Info Service Public Company Listed but they do have a higher level disclosure. This results in a good feeling to the public, they feel that the disclosed information are full transparent. Meanwhile, some other companies try to hide from the analysts and it is interesting to know that many of them have faced the financial crises. Their financial statement announcements concentrate on the amount of numbers rather than the explanation. Based on this kind of information, the public users do not understand what has happened to these companies and come up with many questions. If the companies do not disclosure the information, the analysts will not have the accurate information to analyse.'* (Securities analyst)

Company itself; another factor is the listed companies themselves whether or not they want to disclose and how much do they want to disclose.

> In case A: '... *depend on the listed companies themselves whether they want to disclose or not and how much do they want to disclose. In the past, the Siam Cement Public Company Limited is one of the best models. For example, if the analyses ask the company's manager about the company break down, the manager will not answer this question directly, instead, they will explain about their total sale size not individual sales of steel nor sales of cement nor the margin in order to protect it from the competitor. Now the concept has been changed due to all the competitors are in the competitive market.'* (Securities analyst)

It is also depend on the company. Thai companies can be divided into two groups. Large listed companies, and the medium and small listed companies.

> In case F: *'The first group is the stable companies such as the large size listed companies which have professional management. Uhmm... the market mechanism has more influence on the companies in this group than disclosure. When these companies disclose information, it will increase their stock premium. Therefore, companies in this group usually disclose more information than the investors need and more than required by the SET.'*

> *'....the second group is medium size and small size listed companies. These companies usually disclose their information at the minimum requirement of the SET. Therefore, the requirement from the SET has more influence on companies in this group.'* (Fund manager)

Disclosure and the information asymmetry

An information asymmetry is present when some parties to business transactions may have an information advantage over others. Information asymmetry causes the market to become inefficient.

> In case F: *'... Uhmm...in small listed companies, some top executives does not know nor clearly understand the policy of how to properly disclose information, so it causes an information asymmetry. For instance, when some small groups of investors make an appointment with the (small) companies' top executive, sometimes these top executives were not careful with the information which they had disclosed. They forget that that information should be disclosed to public at the same time. Sometimes top executives in small listed companies announce the information in their small meeting. Consequently, those small groups of investors who attend that meeting will get the benefit.'* (Fund manager)

Therefore, it would be possible if the company provides quality disclosure, it could be reduce this problem from the capital market. The question was asked whether disclosure could reduce information asymmetry problem in the capital market, most of the interviewees agreed that it could reduce some of the problem but not the whole.

> In case B: *'An adequate disclosure could reduce some information asymmetry problems and the rest is dependent on the capability of the analyst. The ones who have more competence and more experience will be able to get more information.'* (Securities analyst)

> In case C: *'Yes, it can solve some problems but still some are left because there is unequal information access among groups of investors,*

due to some information access channels being difficult and expensive to access.' (Securities analyst)

In case D: *'Yes, if the companies treat all investors equally. Everyone should acquire the same information at the same time. Therefore, no one should get more information than the others, and the information asymmetry problem should be decrease.'* (Securities analyst)

However, one institutional fund manager commented that for individual investors, although the company provides good in disclosure, the information asymmetry still exists.

In case G: *'May I divide the investors in to two groups, institutional investors and individual investors. For institutional investors, mostly it is their duty to follow up the information, if they missed some part of the information that means they are deficient in their responsibility. For the individual investors, it would be difficult for them to access the information. Almost ninety percent of them are unable to catch up the information in time because it is not their job to follow up the information. Even though there is good disclosure in the capital market, the information asymmetry problems still happen. Therefore, the other possibly alternative for them to invest is mutual funds instead of stock.'* (Fund manager)

The effect of disclosure on stock pricing

Disclosure can affect stock pricing in two ways. The first way is about disclosure of information, and the second way is about the news that the companies release. Most of the interviewees asserted that information disclosure does not affect on stock pricing as much as the news that announced by the companies.

In case F: *'....if we used the word "information" for something significant to the share price (or relate to the share price). If the companies disclose the same information and give all of the details at once to everybody, allow them to have enough time to analyse the information, the share price will vary according to the fundamental factors. In contrast, if the companies disclose or announce their information during a buy and sell period the changing of the share price will be very volatile and it will not depend on the fundamental factors. Well, if we define the information disclosure'* (Fund manager)

Moreover, good disclosure also effect on stock pricing

In case B: *'Good disclosure would increase the stock premium. Good disclosure means that the companies disclose their information, both*

positive and negative. The companies should disclose relevance information with accuracy, these would increase their transparency. For instance, in the past CP (Charoen Pokphand Foods Public Company Limited) stock did not reach a higher premium when they traded because the investors wondered about the accuracy of their information and did not trust the information disclosed. Compared with the Advanced (Advanced Info Service Public Company Limited) stock and the PTT (PTT Public Company Limited) stock which reach higher premium when traded, that because of their transparent disclosure.' (Securities analyst)

In case F: '.... *If "information" is means everything that can effect on the share price, therefore the companies should have a clear, complete and timely disclosure system. Good disclosure system will allow analysts and the investors to receive the information at the same time. If it is not timely or each group of investors did not receive the same information these will absolutely effect on the share price. Moreover, it will be an advantage or disadvantage for some group of people who acquire the information faster or slower than the other group, or difference in analyse capability.'* (Fund manager)

Another characteristic of good disclosure that should be effect on the stock pricing is transparency.

In case A: '*The transparent disclosure should effect on pricing. A company with transparent disclose is more likely to have a higher share price than the company without transparent disclosure. For example, both companies may have an equal profit, but the P/E of the company which discloses unclear information would not be as high as the P/E of the transparent company. Some studies indicate that the transparent company's stock premium is about 20-25 percent higher than the share price of the companies without transparency.*' (Securities analyst)

In case C: '....*the more transparent of the listed companies, the higher stock premium the companies get because the investors do not doubt the companies' transparency. The obvious example for this case is PTT public company limited. PTT gives more details when it discloses information; the investors have no doubt about the company, consequently the company get a higher stock premium.*' (Securities analyst)

Another insight from the interviews, the interviewee indicated that if the information asymmetry reduced, it would lift up the stock liquidity

In case E: '*Uhmm..... it will attract investors' attention. If the companies neither disclose adequate information nor arrange a company visit (especially, top manager meeting), the institutional investors will ignore the companies' stocks. When the institutional investors are not interested in those stocks, the remainder of investors would be only individual*

investors and the company's executives. Consequently, those stocks will lose stock liquidity' (Fund manager)

Theme III: Voluntary disclosure

The reasons to engage in voluntary disclosure

The interviewees indicated that there are several reasons why companies engage in voluntary disclosure;

- **Advertise the company;** one institutional fund manager stated that

  In case G: *'The more the companies disclose their information, the more the companies get the benefit. It seems like the companies advertise themselves to the investors for their better understanding of the companies and to persuade the investors to invest in the companies.'* (Fund manager)

- **Improve their transparency;** most of the interviewees indicated that a company engages in voluntary disclosure because it would like to improve its transparency. The more the company disclosed the additional information for investment, the more the company looks clearly for the investors. For instance, some companies set up an IR department and a company website, where it can regularly update the information for their investors.

- **Increase the quality;** most of the interviewees asserted that companies engage in voluntary disclosure because this will increase the quality of their disclosure.

- **Increase the companies' value and restore investor confidence;** voluntary disclosure will help to increase the companies' value. The more the companies disclose the information, the more people clearly understand the companies. Moreover, voluntary disclosure is beneficial for the companies that need to restore investor confidence, especially in a country that has a financial crisis like that experienced in Thailand. Thus, improving investor confidence should begin with the corporate transparency and accountability first.

  In case F: *'... The large size listed companies would be more professional; they realized how important the information is. They know that if they want to increase their companies' value or persuade the*

investors to invest in their stock, they have to disclose clear information. Therefore, they are willingly to disclose additional information and think that it does not cost anything….' (Fund manager)

- ***Increase the stock premium;*** most companies engage in voluntary disclosure because they want the investors pay attention in their stock and increase their stock premium.

  In case D: *'To disclose more information than the minimum level of the SET requirement is good for the company and it would make investors understand the company clearly, which will consequently effect on the P/E. However, too much information disclosure might be either endangering the companies as well because it might be benefit for their competitors'* (Securities analyst)

  In case F: *'Actually, most companies that have an IR department that feeds their information to the investors; they usually arrange the meeting for analysts and investors quarterly. These meeting also cost the companies, but the companies will get the benefit from these costs in the form of a stock premium. Therefore, the companies pay attention on the voluntary disclosure.'* (Fund manager)

Voluntary disclosure enhances the value of the annual report

Most of the interviewees agreed that voluntary disclosure enhances the value of the annual report. The more information disclosed, the more investors clearly understand the company's annual report. Consequently, they should be able to make a better investment decision.

> In case A: *'Voluntary disclosure enhances the value of the annual report and benefits the investor. Moreover, it would be better, if the company has it own website to disclose their information to public and always update the information.'* (Securities analyst)

Moreover, the interviewees stated that companies should disclosure both good and bad.

> In case G: *'Yes, voluntary disclosure enhances the company's value. The companies should disclose both good side and bad side, which will be benefit for the investors.'* (Fund manager)

The limitation of the voluntary disclosure

Most of the interviewees indicated that additional information is good and of benefit for the investors, especially for the sophisticate investors because they are able to understand the information clearly and are able to analyse the information. However, the provider should be aware and consider the information disclosed in the annual report or others channel too, because not all of the investors are sophisticated. If the companies disclose too much information, it could make the unsophisticated investors confused and might not be of benefit to them.

> In case B: *'Additional disclosure is good, but if the companies disclose too much information, I do not think it would be of benefit; too much information would make investors confused. Not all of the investors are sophisticated in this field, only some groups of investor could interpret and understand the annual report clearly. Therefore, if the companies give too much information, it would make investors confused and be misleading. However, some sophisticated investors who prefer more information maybe dispute this idea, and ask the companies to make voluntary disclosure.'* (Securities analyst)

Therefore, the interviewees suggested that the companies should form their IR department to provide more information for the investors.

> In case B: *'Some companies form an IR department to provide more information to the analysts and investors because some sophisticate information will be too complicated for some investors.'* (Securities analyst)

Another way that the interviewees suggested is the companies should give the additional and complicated information to the analysts who could interpret and understand that information.

> In case B: *'.....The companies could solve this problem by passing the information to the right person, such as analysts; who has the capability to interpret the information instead of to all investors. Therefore, when the companies need to give some additional information, they should not give that information directly to the public because it can cause many problems. If the companies give too much information, it is useless for some investors who are not sophisticated and cannot interpret it. It would be better if the companies give that information to the analysts because they would know how to interpret and make it simple to understand for the unsophisticated person. They have their own ways to interpret and distribute in order to make it as reader friendly.'* (Securities analyst)

Theme VI: Type of information and section in the annual report

Type of information

There are two types of information disclosed by companies; quantitative and qualitative. Quantitative information is considered as the information in numerical form or involves a measurement of any kind, while qualitative information is not. Qualitative information could be much more than just written document in words or text; for example an in-depth interview, direct observation and so on. Some of the interviewees indicated that they preferred quantitative information such as financial information from the financial statements or ratios rather than qualitative information.

> In case F: '.....*Actually, I use both types of data and focus more on the quantitative data because we can look for all ratios from that. These ratios present the performance of the company and at the same time we use it as a double check tool for us; whether the top executives can deliver what they had committed to in the past through the financial statement or not. Therefore, the quantitative data is very useful for us to forecast the company's share price in the future.*' (Fund manager)

While some of the interviewees asserted that they preferred qualitative information much more that quantitative information.

> In case B: '.....*I think qualitative is more important than quantitative. Actually, most analysts prefer knowledge based information to indicative information. For example, if some companies announce their strength and good news, in fact I do not think they should do like that, instead of doing thing like that, it would be better if they could inform us with their important quantitative and qualitative information to analyze and allow us to raise any question. The companies should provide the fundamental information, for example, give some information about what happens with this year's sales and briefly explain or forecast the future, but do not express their own idea, otherwise it will be too much judgement.*' (Securities analyst)

However, others interviewees stated that qualitative information also important when making decisions, because they do not want to miss some points of view; for instance, companies' competitive situations, companies' problems, and companies' competitors.

> In case F: '.....*The qualitative data is also important too. As we already know that the quantitative data is the historical data, but to forecast the*

future we need the qualitative data to plug in. For example, if we want to forecast how much the sales will increase, what the margin will be, how much the bottom line is, how much dividend should be paid, etc. All of these need qualitative data such as industry trend, top executive forecast on product price or their competence to plug in with all the numerical data in order to have a forecast data.' (Fund manager)

Although, there are two views on type of information, but most of the interviewees stated that they pay attention in both type of information equally. The quantitative information will be used in analyses of trend in order to forecast the future, while the qualitative information will add up some other important information which are not in the numbers, such as competitive condition etc. Therefore, without one of both, the analyses will not be complete.

> In case A: '*.....both types of information are important. Without one side of the information the analysis will not be complete. Sometime quantitative information does not come from financial statements, it may be comes from statistics or from the analysis of specialists in the industry. Therefore, I can't identify which type of information is the most important.'* (Securities analyst)

Most preference section in the annual report

Most interviewees indicated that the most useful sections in the annual report are sections related to qualitative information, rather than quantitative information such as financial information which they could access before they received the annual report.

> In case F: '*Uhmm... It does not mean that we did not pay any attention to the annual report but because we can access most information before we have the annual report. Therefore, I just look at... Uhmm... the section on corporate governance, audit committee report, nominating committee report, and risk management committee report. I pay attention on these sections in the annual report. If you asked about the important information in the annual report, I would say that all of the financial data are very important. Since we already have this fact before the annual report be present and we couldn't wait that long, so most of the time we obtained the financial data from the website not directly from the annual report. For example, in some situation if we have to wait for the information in the annual report until the following April, at that time the overall situation or figure might be changed already.'* (Fund manager)

The interviewees prefer the qualitative sections because these sections informed them of the executives' visions and the company's future direction.

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In case H: *'Uhmm… the first sections that I consider is the message from the chairman, vision and mission, Management's Discussion Analysis and financial highlights.'* (Fund manager)

In case A: *'Vision is important. Sometimes the message from the chairman would inform the vision of the companies.'* (Securities analyst)

Moreover, the interviewees pay attention in the companies' historical information, because this information shows the companies' performance and development.

In case B: *'Uhmm..It should be the historical information structure. I read some of the opening statement, thoroughly pay attention to the audit report and financial data but not much on the rest.'* (Securities analyst)

In case G: *'…..the historical data. I usually look at the performance of the companies in the past 3 – 5 years. The more far back the information available is, the more visibility the development of the company.'* (Fund manager)

Furthermore, the interviewees asserted that the more the companies disclose historical information, the more they get benefit.

In case B: *'….The analysts can keep that as the reference information and the information such as time series data is also of benefit to us too. We could forecast the companies' trend from those time series data.'* (Securities analyst)

Information required as additional disclosure in the annual report

Some of the interviewees stated that the annual report already covered all necessary the information; therefore they need it more up to date.

In case F: *'…In my opinion I think the annual report has covered them all. This question should asked of the individual investors, because they really need the information from the annual report and they might need some additional information. For the institutional investors, it is already covered because they are able to access many sources of information they need before the annual report announced.'* (Fund manager)

In case G: *'…Actually, the annual report provides some necessary information, but I also prefer online information because it is more up to date.'* (Fund manager)

While others interviewees indicated that they need more information on corporate and management structure and historical trends.

In case A: *'…corporate and management structure, results of the operation of the companies in the past. Historical information is very*

important, because analysts are trend analysts. Therefore, the more the companies disclose their historical information, the easier for analysts to analyse. The analysts' duty are analysing the strength and weakness of the companies.' (Securities analyst)

Theme V: Auditor and the credibility of the annual report

The importance of the auditor and the credibility of the annual report

Most of the interviewees indicated that the audit is important. Besides, they perceived that the auditors are increasing the credibility of the financial report, because the auditors are the one who verified the accuracy of the financial statements. Thus, if the financial statements are confirmed by the auditors, it means that those statements are accurate and reliable within the accounting principles.

> In case A: *'Auditors are very important in enhancing the credibility of the financial statements and annual report, because it is the view from the third party who gains nothing from the company or the manager.'* (Securities analyst)

> In case F: *'...the auditor enhances the credibility of the information disclosure for companies' financial statement, and the quality of the auditor is highly required.'* (Fund manager)

Dose auditor reputation matter (auditor reputation and the credibility of the annual report)

The reputation of the audit firm is important. From the interviews, it seems that big size audit firms or international audit firms are getting more advantage than smaller size audit firms or local audit firms.

> In case A: *'The reputation of the audit firm has an important role and is associated with the disclosure. An international audit firm or the audit firm with much experience would have more credibility than a local audit firm. However, some listed companies have limited budgets; thus, they cannot hire an international audit firm because they cannot afford the audit fee. Therefore, if the audit firm is licensed and approved by the Securities and Exchange Commission, that firm would have more credible and reliable.'* (Securities analyst)

Most interviewees have confidence on the statements audited by big audit firms. They do not doubt in an accuracy of the financial statements which are audited by the

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big audit firms because they believe that those statements are well examined by audit team. According to the big audit firms are well known than small audit firms; somehow, if there are any mistakes in the financial statements that are audited by the big audit firm, it could cause a huge negative effect on their reputation. Moreover, big audit firm usually have more money to invest in their audit team and audit tools which effect on the audit process.

> In case D: *'Uhmm..... Big Four audit firms are usually more reliable than the local audit firms, because they are international. Uhmm..... Compared with local firms, these firms are quite big firms, so they have more money; to develop and invest in their auditors and audit tools for a better audit process. Besides, the Big Four audit firms also have their own research departments and other support departments to study in, search for, and prepare some up-to-date information or some specialist information for their auditors. Therefore, it would not be a problem for the Big Four audit firms if they have to audit the companies which need very specialist or have very complicated product lines. The Big Four audit firms' auditors could ask their support departments whenever they have some problems or need some more specialist information, while it would be difficult for the local audit firms because setting up the support departments consume a lot of money.'* (Securities analyst)

Some of the interviewees stated that the reputation of audit firm enhances the credibility of the annual report because they perceived that financial statements which are audited by the big audit firms are more reliable and more confident, when compared with the ones from the small audit firms.

> In case E: *'Uhmmm..... Reputation?.......if you are talking about reputation, there are some different among audit firms, something related to credibility. We usually give more credit to big audit firms than small audit firms. We have to pay more attention in the statements that are verified by small audit firms. However, some audit firms that meet the requirement and approved by the Securities and Exchange Commission of Thailand (SEC) also provided us an odd statements, and most of the odd statements are come from small audit firms. Consequently, the images of small audit firms are in the negative side, but I did not mean all of the small audit firms. There are some good small audit firms too. Therefore, we should be careful when looking at the financial statements.'* (Fund manager)

> In case F: *'For psychology, they are different. At present, the Securities and Exchange Commission of Thailand (SEC) declared the list of auditors who have qualification to audit listed companies and I am not supposed to criticize whether their audit quality is different, we assumed that there is no difference. In fact, if they are Big Four, we will more confident as their teams have more quality and better prepare. For*

example, some listed companies may choose some audit firm on SEC list because the audit fee is cheaper, or because they can influence on audit firm, or can endorse some accounting transaction. If they choose Big Four instead, we ensure that they have internal audit and will not allow their auditors or staff to act against the regulations. I admit that I have some bias. If the report was audited and certified by Big Four audit firm, I am sure that I can rely on those figures. If not, I can hardly rely on and have to investigate the details carefully. I believe that there are difference in the result, their effort, their certified, and interfere by listed companies.' (Fund manager)

Moreover, the interviewees indicated that when they used the financial statements audited by big audit firms, it seems that they do not scarcely doubt about the accuracy of the statements.

In case G: *'.... When we read through the audit report which verified by the reputation audit firm, we scarcely doubt about the accuracy of the statements. In contrast, if the statements are verified by a no name audit firm; we have to do double jobs, first, to read through the audit report and concern whether this audit report is correct or not, and second, we can rely on the auditors or not. Comparing between the audit report which verified by the reputable audit firm and the no name audit firm, it easier for us to use and work on the financial report from the reputatable audit firm than the no name audit firm.'* (Fund manager)

In case I: *'In Thailand, I would say that there is nothing to inform that we will discount for the IPO price if your financial statements were audited by Big-Four. If not, the company executives might be in trouble to answer the analyst's questions. It seems like you have two financial statements, if one was verified by Big-Four audit firm, the analysts may not ask any questions. If not, the company's executives would probably face many questions even in the details of the numerical data. Especially for the listed companies which used to be the family business companies before, they would be asked a lot of question and the companies would be more doubt in their transparency if they were not audit by reliable audit firms. However, if asking whether there are any different in share price, I would say that there are no differences.'* (Fund manager)

However, some of the interviewees argued that even though the audit is very important and increases the credibility of the financial statements, but they did not put too much weight on the reputation of the audit firms. They only pay much more attention to the company itself.

In case B: *'...For me, the reputation of the audit firm does not enhance the creditability of the annual report. The thing that I am concerned is the company itself, and the company share price depends on its performance not the audit firm. If the companies show good*

performance, it means that they are a success, but if not, it means that they failed. Even though the unsuccessful company hired a Big Four audit firm, it could not turn from unsuccessful result to be the success one.' (Securities analyst)

Furthermore, they asserted that the reputation of the audit firm does not effect on the stock premium.

In case F: '... *I do not think it (the reputation of the auditor) is important. Uhmm... for example, assume that there are two financial statements. The first statement verified by a Big Four, while another statement verified by audit firm ABC which is approved by the Securities and Exchange Commission of Thailand (SEC). If you ask that whether the reaction of the share price of these companies is different or not, I do not think it is different. The reason is that they have met the minimum requirement of the SEC which means that they must be approved beneath the accounting principle, therefore it is indifferent.'* (Fund manager)

Appendix D: Disclosure index

Disclosure index

(A) Strategic information:

General corporate information

brief history of company

organizational structure

Corporate strategy

a statement of coporate goals or objectives is provided

a general statement of corporate strategy is provided

actions taken to achieve the corporate goal are discussed

planned actions to be taken in future years are discussed

a time frame for achieving corporate goals is provided

strategy towards environmental issues is provided

detailed segment performance is provided

risk policy are provided

commercial risk assessments are provided

financial risk assessments are provided

interest or exchange risks are discussed

other risk assessments are provided

Production

a general description of the business is provided

the principal products/services are identified

specific characteristics of these products/services are described

investments in production are discussed

rejection/defect rates are discussed

volume of materials consumed is discussed

changes in production methods are discussed

changes in product materials are discussed

Research and development

corporate policy on research and development

discussion of future research and development activities

number employed in research and development

forecast of research and development expenses

discussion of new product development

Market strategy

sales and marketing strategy is provided

distribution channels are described

sales and marketing costs are provided

brand equity/visibility rating are discussed

customer turnover rates are discussed

customer satisfaction level is discussed

amount of new orders placed this years is provided

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Competition and outlook

the principal markets are identified

specific characteristics of these markets are described

the market sizes are estimated

market share are provided

change in market share is discussed

a forecast of market share is estimated

barriers to entry are discussed

the market growths are estimated

impact of barriers to entry on profits is discussed

the impact of competition on profits is discussed

impact of barriers to entry on future profits is discussed

the impact of competition on future profits is discussed

Future prospects

qualitative forecast of sales

quantitative forecast of sales

qualitative forecast of profits

quantitative forecast of profits

qualitative forecast of cash flows

quantitative forecast of cash flows

assumptions underlying the forecasts

current period trading results - qualitative

current period trading results - quantitative

(B) Non financial information:

Information about directors

age of the directors

educational qualifications (academic and professional)

commercial experience of the executive directors

other directorships held by executive directors

Employee information

line of business distribution of employees

categories of employees by gender

number of employees

reasons for changes in employee numbers or categories

amount spent on education or training

categories of employees trained

number of employees trained

data on accidents

Social policy and value added information

safety of products (general)

the safety and welfare policy/ benefits of employees are discussed

provident fund for employees are discussed

environmental protection programs - qualitative

environmental protection programs - quantitative

charitable donations (amount)

community programs (general)

(C) Financial information:

Financial review

return on assets or sufficient information to compute return on asset
(i.e. net income, tax rate, interest expense and total assets is provided)

net profit margin or sufficient information to compute net profit margin
(i.e. net income, tax rate, interest expense and sales is provided)

return on equity or sufficient information to compute return on equity
(i.e. net income and stockholders equity) is provided

profitability ratios
liquidity ratios
other ratios

Management discussion and Analysis

change in sales

change in operating income

change in cost of goods sold

change in cost of goods sold as a percentage of sales

change in gross profit

change in gross profit as a percentage of sales

change in selling and administrative expenses

change in interest or interest income

change in net income

change in inventory

change in account receivable

change in capital expenditures or R&D

(D) Channels of Information and Investor Relations:

Company offer multiple channels of access to information
annual report
company's website
analysts meeting

Company's website

business operation

up-to-date financial statements

financial statement within last 3 years

up- to- date press release
shareholding structure
organisation structure
corporate group structure
downloadable annual report

invitation for general shareholders' meeting

provided up-to-date minutes from shareholders' meeting

available both in Thai and English language

Investor relations department

investor relation department

provided an obviously channel to contact
e.g. telephone number or email address

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Appendix E: Questionnaire survey

Questionnaire

Title: The level of companies' disclosure: The views of Thai financial intermediaries.

Section 1: Demographics

1. What is your professional background?

   ☐ Financial analyst   ☐ Fund manager   ☐ Other (specify)……………

2. How long have you been working in this career?

   ☐ under 5 yrs ☐ 5 – 10 yrs   ☐ 11 – 15 yrs ☐ 16 – 20 yrs ☐ over 20 yrs

3. Please indicate below which of the industry groups do you following?
   (More than one may be chosen)

   ☐ Agro & Food Industry   ☐ Financials

   ☐ Industrials   ☐ Property & Construction

   ☐ Resources   ☐ Services

   ☐ Technology   ☐ Other (specify)……………

In this section there is a list of securities in the SET100 Index (July 1, 2008 – December 31, 2008) classified by industry group.

Instructions:

Please rate the level of a company's voluntary disclosure on the scale of 1-5 by circling the appropriate number where 1 is the lowest level of information disclosure and 5 is the highest level of information disclosure.

The level of the company's disclosure is divided into;

<table>
<tr>
<td>*1. Public disclosure;*</td>
<td>i.e. annual report, quarterly and other published information, etc.</td>
</tr>
<tr>
<td>*(Please consider)*</td>
<td>*The timeliness and comprehensiveness of the information disclosed by the company.*</td>
</tr>
</table>

<table>
<tr>
<td>*2. Private disclosure;*</td>
<td>i.e. communication between you and the company's top executive or IR department, company visit etc.</td>
</tr>
<tr>
<td>*(Please consider)*</td>
<td>*Accessibility, knowledge ability, and responsiveness of the company contact.*</td>
</tr>
</table>

<u>**NOTE !**</u>   Only rate those companies that you are currently following and do not rate the others

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Industry group: Financials

No.	Company Name		Level of company's disclosure									
			Public Disclosure					Private Disclosure				
1	ACL BANK PUBLIC COMPANY LIMITED	ACL	1	2	3	4	5	1	2	3	4	5
2	BANK OF AYUDHYA PUBLIC COMPANY LIMITED	BAY	1	2	3	4	5	1	2	3	4	5
3	BANGKOK BANK PUBLIC COMPANY LIMITED	BBL	1	2	3	4	5	1	2	3	4	5
4	KASIKORNBANK PUBLIC COMPANY LIMITED	KBANK	1	2	3	4	5	1	2	3	4	5
5	KIATNAKIN BANK PUBLIC COMPANY LIMITED	KK	1	2	3	4	5	1	2	3	4	5
6	KRUNG THAI BANK PUBLIC COMPANY LIMITED	KTB	1	2	3	4	5	1	2	3	4	5
7	THE SIAM COMMERCIAL BANK PUBLIC COMPANY LIMITED	SCB	1	2	3	4	5	1	2	3	4	5
8	SIAM CITY BANK PUBLIC COMPANY LIMITED	SCIB	1	2	3	4	5	1	2	3	4	5
9	TISCO BANK PUBLIC COMPANY LIMITED	TISCO	1	2	3	4	5	1	2	3	4	5
10	TMB BANK PUBLIC COMPANY LIMITED	TMB	1	2	3	4	5	1	2	3	4	5
11	ADKINSON SECURITIES PUBLIC COMPANY LIMITED	ASL	1	2	3	4	5	1	2	3	4	5
12	ASIA PLUS SECURITIES PUBLIC COMPANY LIMITED	ASP	1	2	3	4	5	1	2	3	4	5
13	BUALUANG SECURITIES PUBLIC COMPANY LIMITED	BLS	1	2	3	4	5	1	2	3	4	5
14	BFIT SECURITIES PUBLIC COMPANY LIMITED	BSEC	1	2	3	4	5	1	2	3	4	5
15	KIM ENG SECURITIES (THAILAND) PUBLIC COMPANY LIMITED	KEST	1	2	3	4	5	1	2	3	4	5
16	KGI SECURITIES (THAILAND) PUBLIC COMPANY LIMITED	KGI	1	2	3	4	5	1	2	3	4	5
17	PHATRA SECURITIES PUBLIC COMPANY LIMITED	PHATRA	1	2	3	4	5	1	2	3	4	5
18	THANACHART CAPITAL PUBLIC COMPANY LIMITED	TCAP	1	2	3	4	5	1	2	3	4	5
19	SEAMICO SECURITIES PUBLIC COMPANY LIMITED	ZMICO	1	2	3	4	5	1	2	3	4	5

Industry group: Property & Construction

No.	Company Name		Level of company's disclosure									
			Public Disclosure					**Private Disclosure**				
1	RICH ASIA STEEL PUBLIC COMPANY LIMITED	RICH	1	2	3	4	5	1	2	3	4	5
2	SAMCHAI STEEL INDUSTRIES PUBLIC COMPANY LIMITED	SAM	1	2	3	4	5	1	2	3	4	5
3	THE SIAM CEMENT PUBLIC COMPANY LIMITED	SCC	1	2	3	4	5	1	2	3	4	5
4	SIAM CITY CEMENT PUBLIC COMPANY LIMITED	SCCC	1	2	3	4	5	1	2	3	4	5
5	TPI POLENE PUBLIC COMPANY LIMITED	TPIPL	1	2	3	4	5	1	2	3	4	5
6	TATA STEEL (THAILAND) PUBLIC COMPANY LIMITED	TSTH	1	2	3	4	5	1	2	3	4	5
7	AMATA CORPORATION PUBLIC COMPANY LIMITED	AMATA	1	2	3	4	5	1	2	3	4	5
8	ASIAN PROPERTY DEVELOPMENT PUBLIC COMPANY LIMITED	AP	1	2	3	4	5	1	2	3	4	5
9	BANGKOK LAND PUBLIC COMPANY LIMITED	BLAND	1	2	3	4	5	1	2	3	4	5
10	CH. KARNCHANG PUBLIC COMPANY LIMITED	CK	1	2	3	4	5	1	2	3	4	5
11	CENTRAL PATTANA PUBLIC COMPANY LIMITED	CPN	1	2	3	4	5	1	2	3	4	5
12	HEMRAJ LAND AND DEVELOPMENT PUBLIC COMPANY LIMITED	HEMRAJ	1	2	3	4	5	1	2	3	4	5
13	ITALIAN-THAI DEVELOPMENT PUBLIC COMPANY LIMITED	ITD	1	2	3	4	5	1	2	3	4	5
14	LAND AND HOUSES PUBLIC COMPANY LIMITED	LH	1	2	3	4	5	1	2	3	4	5
15	L.P.N. DEVELOPMENT PUBLIC COMPANY LIMITED	LPN	1	2	3	4	5	1	2	3	4	5
16	METROSTAR PROPERTY PUBLIC COMPANY LIMITED	METRO	1	2	3	4	5	1	2	3	4	5
17	MAJOR DEVELOPMENT PUBLIC COMPANY LIMITED	MJD	1	2	3	4	5	1	2	3	4	5
18	POWER LINE ENGINEERING PUBLIC COMPANY LIMITED	PLE	1	2	3	4	5	1	2	3	4	5
19	PREUKSA REAL ESTATE PUBLIC COMPANY LIMITED	PS	1	2	3	4	5	1	2	3	4	5
20	QUALITY HOUSES PUBLIC COMPANY LIMITED	QH	1	2	3	4	5	1	2	3	4	5

No.	Company Name		Level of company's disclosure									
			Public Disclosure					**Private Disclosure**				
21	ROJANA INDUSTRIAL PARK PUBLIC COMPANY LIMITED	ROJANA	1	2	3	4	5	1	2	3	4	5
22	SC ASSET CORPORATION PUBLIC COMPANY LIMITED	SC	1	2	3	4	5	1	2	3	4	5
23	SANSIRI PUBLIC COMPANY LIMITED	SIRI	1	2	3	4	5	1	2	3	4	5
24	SUPALAI PUBLIC COMPANY LIMITED	SPALI	1	2	3	4	5	1	2	3	4	5
25	SINO-THAI ENGINEERING AND CONSTRUCTION PUBLIC CO.,LTD.	STEC	1	2	3	4	5	1	2	3	4	5
26	TICON INDUSTRIAL CONNECTION PUBLIC COMPANY LIMITED	TICON	1	2	3	4	5	1	2	3	4	5
27	TANAYONG PUBLIC COMPANY LIMITED	TYONG	1	2	3	4	5	1	2	3	4	5

Industry group: Industrial

No.	Company Name		Level of company's disclosure									
			Public Disclosure					**Private Disclosure**				
1	SOMBOON ADVANCE TECHNOLOGY PUBLIC COMPANY LIMITED	SAT	1	2	3	4	5	1	2	3	4	5
2	THAI STANLEY ELECTRIC PUBLIC COMPANY LIMITED	STANLY	1	2	3	4	5	1	2	3	4	5
3	G J STEEL PUBLIC COMPANY LIMITED	GJS	1	2	3	4	5	1	2	3	4	5
4	G STEEL PUBLIC COMPANY LIMITED	GSTEEL	1	2	3	4	5	1	2	3	4	5
5	SAHAVIRIYA STEEL INDUSTRIES PUBLIC COMPANY LIMITED	SSI	1	2	3	4	5	1	2	3	4	5
6	THAI UNIQUE COIL CENTER PUBLIC COMPANY LIMITED	TUCC	1	2	3	4	5	1	2	3	4	5
7	POLYPLEX (THAILAND) PUBLIC COMPANY LIMITED	PTL	1	2	3	4	5	1	2	3	4	5
8	PTT CHEMICAL PUBLIC COMPANY LIMITED	PTTCH	1	2	3	4	5	1	2	3	4	5
9	THAI PLASTIC AND CHEMICALS PUBLIC COMPANY LIMITED	TPC	1	2	3	4	5	1	2	3	4	5

Industry group: Agro & Food Industry

No.	Company Name		Level of company's disclosure									
			Public Disclosure					Private Disclosure				
1	CHAROEN POKPHAND FOODS PUBLIC COMPANY LIMITED	CPF	1	2	3	4	5	1	2	3	4	5
2	KHON KAEN SUGAR INDUSTRY PUBLIC COMPANY LIMITED	KSL	1	2	3	4	5	1	2	3	4	5
3	MINOR INTERNATIONAL PUBLIC COMPANY LIMITED	MINT	1	2	3	4	5	1	2	3	4	5
4	THAI UNION FROZEN PRODUCTS PUBLIC COMPANY LIMITED	TUF	1	2	3	4	5	1	2	3	4	5
5	THAI VEGETABLE OIL PUBLIC COMPANY LIMITED	TVO	1	2	3	4	5	1	2	3	4	5

Industry group: Technology

No.	Company Name		Level of company's disclosure									
			Public Disclosure					Private Disclosure				
1	CAL-COMP ELECTRONICS (THAILAND) PUBLIC CO., LTD.	CCET	1	2	3	4	5	1	2	3	4	5
2	DELTA ELECTRONICS (THAILAND) PUBLIC COMPANY LIMITED	DELTA	1	2	3	4	5	1	2	3	4	5
3	HANA MICROELECTRONICS PUBLIC COMPANY LIMITED	HANA	1	2	3	4	5	1	2	3	4	5
4	ADVANCED INFO SERVICE PUBLIC COMPANY LIMITED	ADVANC	1	2	3	4	5	1	2	3	4	5
5	TOTAL ACCESS COMMUNICATION PUBLIC COMPANY LIMITED	DTAC	1	2	3	4	5	1	2	3	4	5
6	FORTH CORPORATION PUBLIC COMPANY LIMITED	FORTH	1	2	3	4	5	1	2	3	4	5
7	JASMINE INTERNATIONAL PUBLIC COMPANY LIMITED	JAS	1	2	3	4	5	1	2	3	4	5
8	SAMART CORPORATION PUBLIC COMPANY LIMITED	SAMART	1	2	3	4	5	1	2	3	4	5
9	THAICOM PUBLIC COMPANY LIMITED	THCOM	1	2	3	4	5	1	2	3	4	5
10	TRUE CORPORATION PUBLIC COMPANY LIMITED	TRUE	1	2	3	4	5	1	2	3	4	5
11	TT&T PUBLIC COMPANY LIMITED	TT&T	1	2	3	4	5	1	2	3	4	5

Industry group: Services

No.	Company Name		Level of company's disclosure									
			Public Disclosure					**Private Disclosure**				
1	CP ALL PUBLIC COMPANY LIMITED	CPALL	1	2	3	4	5	1	2	3	4	5
2	HOME PRODUCT CENTER PUBLIC COMPANY LIMITED	HMPRO	1	2	3	4	5	1	2	3	4	5
3	LOXLEY PUBLIC COMPANY LIMITED	LOXLEY	1	2	3	4	5	1	2	3	4	5
4	SIAM MAKRO PUBLIC COMPANY LIMITED	MAKRO	1	2	3	4	5	1	2	3	4	5
5	ROBINSON DEPARTMENT STORE PUBLIC COMPANY LIMITED	ROBINS	1	2	3	4	5	1	2	3	4	5
6	BANGKOK DUSIT MEDICAL SERVICES PUBLIC COMPANY LIMITED	BGH	1	2	3	4	5	1	2	3	4	5
7	BUMRUNGRAD HOSPITAL PUBLIC COMPANY LIMITED	BH	1	2	3	4	5	1	2	3	4	5
8	BEC WORLD PUBLIC COMPANY LIMITED	BEC	1	2	3	4	5	1	2	3	4	5
9	MAJOR CINEPLEX GROUP PUBLIC COMPANY LIMITED	MAJOR	1	2	3	4	5	1	2	3	4	5
10	MCOT PUBLIC COMPANY LIMITED	MCOT	1	2	3	4	5	1	2	3	4	5
11	BETTER WORLD GREEN PUBLIC COMPANY LIMITED	BWG	1	2	3	4	5	1	2	3	4	5
12	THE ERAWAN GROUP PUBLIC COMPANY LIMITED	ERAWAN	1	2	3	4	5	1	2	3	4	5
13	AIRPORTS OF THAILAND PUBLIC COMPANY LIMITED	AOT	1	2	3	4	5	1	2	3	4	5
14	BANGKOK EXPRESSWAY PUBLIC COMPANY LIMITED	BECL	1	2	3	4	5	1	2	3	4	5
15	PRECIOUS SHIPPING PUBLIC COMPANY LIMITED	PSL	1	2	3	4	5	1	2	3	4	5
16	REGIONAL CONTAINER LINES PUBLIC COMPANY LIMITED	RCL	1	2	3	4	5	1	2	3	4	5
17	THAI AIRWAYS INTERNATIONAL PUBLIC COMPANY LIMITED	THAI	1	2	3	4	5	1	2	3	4	5
18	THORESEN THAI AGENCIES PUBLIC COMPANY LIMITED	TTA	1	2	3	4	5	1	2	3	4	5

Industry group: Resources

No.	Company Name		Level of company's disclosure									
			Public Disclosure					**Private Disclosure**				
1	BANPU PUBLIC COMPANY LIMITED	BANPU	1	2	3	4	5	1	2	3	4	5
2	THE BANGCHAK PETROLEUM PUBLIC COMPANY LIMITED	BCP	1	2	3	4	5	1	2	3	4	5
3	ELECTRICITY GENERATING PUBLIC COMPANY LIMITED	EGCO	1	2	3	4	5	1	2	3	4	5
4	GLOW ENERGY PUBLIC COMPANY LIMITED	GLOW	1	2	3	4	5	1	2	3	4	5
5	IRPC PUBLIC COMPANY LIMITED	IRPC	1	2	3	4	5	1	2	3	4	5
6	THE LANNA RESOURCES PUBLIC COMPANY LIMITED	LANNA	1	2	3	4	5	1	2	3	4	5
7	PTT PUBLIC COMPANY LIMITED	PTT	1	2	3	4	5	1	2	3	4	5
8	PTT AROMATICS AND REFINING PUBLIC COMPANY LIMITED	PTTAR	1	2	3	4	5	1	2	3	4	5
9	PTT EXPLORATION AND PRODUCTION PUBLIC COMPANY LIMITED	PTTEP	1	2	3	4	5	1	2	3	4	5
10	RATCHABURI ELECTRICITY GENERATING HOLDING PUBLIC CO.,LTD.	RATCH	1	2	3	4	5	1	2	3	4	5
11	THAI OIL PUBLIC COMPANY LIMITED	TOP	1	2	3	4	5	1	2	3	4	5

Comments: _____

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Thank you for your time in completing this questionnaire.

All your answers are completely confidential.

Please return the questionnaire in the enclosed reply-paid envelop.

Appendix F: Selection criteria for companies to be in the SET 100 Index

The stocks to be included in SET 100 Index will be selected on the basis of the predetermined criteria that follow:

1. Eligible stocks should have been listed and traded on the SET for a minimum of 6 months and ranked in the top 200 on the SET's main board in terms of average daily market capitalisation for the past 12 months.

2. The eligible stocks must be actively traded.
   - On the SET's main board, the monthly turnover value of the eligible stock must have been more than 50 percent of the total average monthly turnover value per stock in the same month.
   - The above criteria should be met for at least 9 out of the 12 months during the evaluation period (or 3/4 of the trading period but not less than 6 months, if the stock has been listed for less than 12 months).
   - If the number of eligible stocks is less than 105, the selection criteria would then be gradually altered until a minimum of 105 stocks have passed the criteria:

3. Eligible stocks should maintain their share distribution or free-float qualifications so that their ordinary shareholders shall hold shares in aggregate of not less than 20 percent of the paid-up capital of the listed company.

4. Eligible stocks must not fall into any one of the following conditions:

   The stock is being delisted or is slated to be delisted according to the Regulation of the Stock Exchange of Thailand.
   - The stock is being voluntarily delisted.
   - Its trading has been suspended for an extended period of time.
   - Its trading might be suspended for an extended period of time in the near future.

However, if the security in question has been listed for over 6 but for less than 12 months then in terms of average daily market capitalisation, the security being considered must have been in the top 200 securities for that entire time period.

5. Should there be more than 100 stocks selected using the above selection criteria, the top 100 stocks ranked by average daily market capitalisation will be chosen for the SET 100 Index (the $101^{st} - 105^{th}$ stocks will be treated as replacements for the SET 100 Index).

6. Periodic Review and Adjustments
The revisions are conducted in December and June of every year. Periodic adjustments and the new list of stocks will be announced as soon as the lists become available. The new stock lists will be used for the SET 100 Index calculations starting with the first trading day of January and July of each year.

For every revision, the index calculation will treat stocks withdrawn or added as having been delisted or newly listed, as the case may be. If some stocks are removed from an index, an equal number of new stocks will be added to ensure the uninterruption of the index.

Appendix G: Important statistical assumptions of multivariate analysis

This study uses a multiple linear regression analysis, the Ordinary Least Squares (OLS) regression, in order to find the linear combination of independent variables that correlate maximally with the dependent variables. OLS regression is a common statistical technique used to regress the dependent variable and the independent variables. Hutcheson and Sofroniou (1999) argue that:

> "...OLS regression is one of the most popular statistical techniques used in the social sciences. It is used to predict values of a continuous response variable using one or more explanatory variables and can also identify the strength of the relationship between these variables" (Hutcheson & Sofroniou, 1999, p.55).

> "OLS regression is a powerful technique for modelling continuous data, particularly when it is used in conjunction with dummy variables coding and data transformation." (Hutcheson & Sofroniou, 1999, p.56).

There are five main conditions that the variables in the simple linear models should meet: normality, linearity, constant variance or homoscedasticity, independence, and the absence of multicollinearity. Hutcheson and Sofroniou (1999) acknowledge that if these assumptions are met, the residuals[21] should have the following properties:

1. They should show on obvious pattern when plotted against the predicted values.
2. They should be roughly normally distributed.
3. Their variance should be constant for all values of the explanatory variables.
4. Successive residuals should be independent, indicating that the value of one observation is not linked or dependent in some way upon the value of the next observation.

> In order to appropriate inferences to be drawn from the results of a statistical test it is necessary to check that the data to be analysed meet the assumptions of the test. (Hutcheson and Sofroniou, 1999, p.25)

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[21] Residuals are what are left over once a model has been fitted to the data – the differences between observed and predicted values (Hutcheson and Sofroniou, 1999, p.25). The residuals provide the diagnostic information which can be used to check for the violation of assumptions and fit of a model.

As the violation of assumptions is an important issue the use of multiple regression analysis, therefore, these problems should be eliminated before the running the regression model. The following discussion will show how the current researcher tested and eliminated these issues.

Normality

In OLS regression, there is the assumption that each variable and all linear combinations of the variables are normally distributed (Field, 2000). However, Hutcheson and Sofroniou (1999) argued that it is not always practical to test this directly due to the large number of tests required to examine all linear combinations of all variables. Therefore, instead of examining every single variable for normality, and using transformations, to obtain normality for each variable, it is possible to examine the linearity and variances of variables, together with the residuals, which can also indicate further information about whether the assumption of normality across the combinations of explanatory variables is likely to be met.

According to Hutcheson and Sofroniou (1999), there are several methods that can be used to investigate normality. The first method is a graphical method which involves examining a frequency histogram for each variable. This strategy can identify departures from normality in a single variable, but it cannot identify departures which are the result of combinations of explanatory variables in the models. Therefore, Hutcheson and Sofroniou (1999) suggest that it is more useful to fit a provisional model first and then examine a histogram of the residuals.

Another method that more useful than the frequency histogram is a normal probability plot.[22] Moreover, normality can also test by examine the degree of symmetry of the variable, Kolmogorov-Smirnov or Kurtosis test.

In this study, several approaches were employed to assess the normality of the data distribution. For univariate analysis, histograms, normal probability plot,

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[22] In a normal probability plot, a diagonal line drawn from lower left to upper right represents the expected value for normal distribution. If the actual distribution of the sample forms a diagonal, then it can conclude that this particular variable is normally distributed.

Kolmogorov-Smirnov, and Skewness-Kurtosis were used to test for normality. The results for Normality tests show that only some independent variables that follows the normal distribution, while dependent variable and control variables are not normally distributed.

Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	joint Prob>chi2
				Skewness/Kurtosis tests for Normality	
				------ joint ------	
effective relative spread	100	0.0000	0.0000	.	0
quote spread	100	0.0000	0.0000	.	0
relative spread	100	0.0000	0.0000	47.32	0
trade frequency	100	0.0000	0.0000	41.13	0
trade size	100	0.0000	0.0000	.	0
company size	100	0.0000	0.0000	.	0
share price	100	0.0000	0.0000	.	0
price volatility	100	0.0000	0.0000	.	0
overall disclosure score	100	0.0577	0.3549	4.43	0.1266
annual report disclosure score	100	0.0594	0.3998	4.38	0.112
strategic disclosure score	100	0.1170	0.4026	3.24	0.1975
non-financial disclosure score	100	0.8798	0.5906	0.31	0.8555
financial disclosure score	100	0.0542	0.3171	4.57	0.131
other disclosure score	100	0.0000	0.0051	25.13	0
public disclosure score	100	0.1167	0.7012	2.68	0.2621
private disclosure score	100	0.1784	0.2976	2.97	0.226

For the multivariate analysis, the residuals plots and the Jarque-Bera statistic[23] were used to test normality. The residuals plot, in Figure G-1 (for untransformed data), shown that the residuals of the estimation model does not follow a normal distribution. Together with the Jarque-Bera statistic results in Table G-1, G-2, G-3, and G-4, which show the Jarque-Bera test (for untransformed data) reject the null hypothesis of normality for all series at both 5 percent and 1 percent level, as the Jarque-Bera statistic show value higher than the critical value of the chi-square distribution at 2 degree of freedom. Therefore, both the residuals plots and the Jarque-Bera statistic for the regression residuals suggest that non-normality problem may occur in the raw (untransformed) data.

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[23] Jarque-Bera statistic is the normality test of Jarque and Bera (1980). According to Thadewald and Buning (2007), the test statistics JB of Jarque-Bera is defined by $JB = \frac{n}{6}\left(S^2 + \frac{(K-3)^2}{4}\right)$

where S is a measure of skewness and K is a measure of Kurtosis and N is the sample size. JB is asymptotically chi-squared distributed with two degrees of freedom, that means the null hypothesis has to be reject at the level α if JB $JB \geq \chi^2_{1-\alpha,2}$. The critical value for the null hypothesis of normality distribution is 5.99 at the 5 percent significance level, and 9.21 at the 1 percent significant level. Higher test values reject the null hypothesis.

Linearity

The second assumption is the linearity assumption, which means that the relationship between the dependent variable and independent variables should be a linear relationship. In order to check whether the assumption of linearity has been met it is required to examine the relationship between the pairs of variables by using regression scatter plots and also through a plot of the residuals. The test did not indicate any linear relationship between the current dependent and explanatory variables. Therefore, non-linearity is likely to be the second violation assumption in the current data.

Constant variance

The third assumption for data with normal errors is that the variance of one variable is about the same at each level of a second variable (Hutcheson and Sofroniou, 1999, p. 27). This is known as homoscedasticity, while different levels of variance or non-constant variance are termed heteroscedasticity. In order to check for constancy of variance, each variable can be investigated by the use of a scatter plot. While for the multiple explanatory variables, this problem can evaluate by examining the residuals of the fitted model. A plot of the residuals versus the fitted values should lie in a horizontal band if the model is a good approximation and there is no heteroscedasticity problem. The heteroscedasticity can be the result of non-normality of a particular variable, or as a result of a non-linearity relationship between variables in the model. Therefore, this problem can be reduced or eliminated by transforming variables to obtain the normality errors, and linearity (Hutcheson and Sofroniou, 1999).

In order to examine this assumption, a graphs plot of the residual for each model has been undertaken by using regression plots via the SPSS programme; by plotting the standardised predicted values of the dependent variable against the standardised residuals (see Field, 2000). This test, as can be seen from Figure G-1 indicated that there is non-constancy in variance across the residuals, which means there is heteroscedasticity problem occurs in the current data. In addition, the scatter plot also confirms that there are the normality and linearity problems in the current data.

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Apart from the scatter plots via the SPSS programme, other heteroscedasticity tests have been conducted via the STATA programme to determine the extent of the heteroscedasticity. The tests are based on Breusch and Pagan (1979), and Cook and Weisberg (1983). Overall, the results provided in Table G-1, G-2, G-3, and G-4 show the tests for all the estimation models (for untransformed data) indicate a significant level of heteroscedasticity which mean the variances are not constant.

Multicollinearity

Multicollinearity is another violation assumption of multiple regression. Multicollinearity is term used to describe a situation when the explanatory variables in a data set are highly correlated to one or more of the other explanatory variables in the model. If these relationships are perfect or very strong, the calculation of the regression model and the appropriate interpretation of the results can be affected (Hutcheson and Sofroniou, 1999). The consequences of this problem depend on the objectives of the analysis. If the goal of the multiple regression is for prediction, then multicollinearity need not present much of a problem, as it primarily affects the calculated importance of the explanatory variables. However, if the goal of the multiple regression is for explanation, the presence of a high degree of multicollinearity poses a serious problem for the correct interpretation of the results (Hutcheson and Sofroniou, 1999, p.79)

Multicollinearity can be identified by correlation coefficients. Relationships between explanatory variables which are rise up to 0.9 or higher indicate a level of multicollinearity that may prove to be problematic (Hair et al., 2006). Alternatively, this problem can also be examined through the 'tolerance' and 'variance inflation factor' (VIF) statistics. Any explanatory variables which have a VIF value of 5, or a tolerance of 2.0 or less, are therefore of interest as they show a degree of multicollinearity which could be problematic (Hutcheson and Sofroniou, 1999).

Transformation

Hair et al. (2006) acknowledge that there are two possible reasons for data transformations:

'(i) to correct violations of the statistical assumptions underlying the multivariate techniques, or (ii) to improve the relationship (correlation) between variables' (Hair et al., 2006, p. 87).

Similarly, Hutcheson and Sofroniou (1999) argued that a traditional way to deal with the violation assumptions of multiple regression, such as normality, linearity, and heteroscedasticity, is the transformation of variables by some mathematical function. In this context Cooke (1998) also asserted that 'Transformation of data is useful in regression analysis when the relationship between the dependent variable and independent variables is inherently non-linear, when the distribution of the errors is not approximately normal, and where there are problems of heteroscedasticity or non-independence of the error terms'

As stated above, the results of the assumptions of the residuals indicate that there are violation assumptions, in particular non-normality and the heteroscedasticity problems, occur when running the raw data (see Table G-1, G-2, G-3, and G-4). These problems are considered as important issues that should be reduced or eliminated before running the regression model. Hair et al. (2006, p. 88) suggest that heteroscedasticity can be remedied only by the transformation of the dependent variable. To meet the regression assumption, dependent variable was transformed into reciprocal form before incorporate into the regression model. Therefore, transforming data was used in the main results analyses (see the results in Table in Chapter 8) to deal with non-normality and the heteroscedasticity problem, and robust standard errors (White, 1980) was used as the further analyses (see the results in Table G-1, G-2, G-3 and G-4).

The results from Chapter 8 (main results) indicate that when transforming dependent variable both non-normality and the heteroscedasticity problem were eliminated. For the normality tests, see main results in Chapter 8, the Jarque-Bera statistic range from

1.485 to 12.37. The results indicate only model (3), model (10) and model (22), the Jarque-Bera statistics (10.15, 12.37 and 9.78 respectively) reject the null hypothesis that the standardized errors are normally distributed at the 1 percent significant level (as the JB statistic higher than 9.21). However, these values are much smaller when compared to the results from the further analyses which estimated by the raw data (JB statistic from model (47), model (54) and model (58) is 3457.15, 3467.78 and 3012.9 respectively). Consequently, when compared the non-normality models; model (3), model (10) and model (22), with the other normality models, the implication of the results do not change. The signs of all variables are remain the same, although the coefficient on trade size is lost its significant. Most importantly, the coefficient on the disclosure score from the non-normality models report the positive relationship to the market liquidity which in consistent with the results from the normality models.

The results report that there is no heteroscedasticity problem for all transformed estimation models in Chapter 8, however, for the untransformed data which provided as further analyses in Appendix G the heteroscedasticity tests indicate the problems. Therefore, the further analyses controlled for the heteroscedasticity problem by using White's (1980) procedure, through which robust standard errors are estimated. For some variables the t-statistics for the robust standard errors are slightly higher than the (untransformed) OLS standard errors and for other they are slightly lower. Overall the robust standard errors do not change much from the (untransformed) OLS standard errors. Therefore, the results in table G-1, G-2, G-3 and G-4 reported only the adjust *t*-statistics based on the White's (1980) procedure.

When compared the results of the transformed estimation models (the main results) to the robust standard errors (Appendix G). The results show that the all variables are reported in the same direction. Only *company size* that reports the sign switches, however, it is not statistically significant for both the transformed estimation models and the robust standard errors models. Overall the results from the transformed estimation models and the robust standard error are reported in the same direction, but the transformed estimation models reveal better results (level of significant) for each variable. These findings suggest that by using White's (1980) procedure as the further analyses, all results are remained the same as by transforming the dependent variable

into the reciprocal form. Therefore, the further analyses, the robust standard errors results, are support the main results which reported in Chapter 8.

Compared Table 8-14 and Table G-1

For the further analyses, the results provided in Table G-1, the regression results of models (45) - (48) do not show a good fit for the model. The adjusted R squared range from 6.2 to 7.6 percent, and only three out of five coefficients of the control variables are significant with p-values less than 0.1. The coefficients for *trade frequency, trade size, share price* and *return volatility* are behave in the same direction as the results from Table 8-14, although *trade frequency* report no statistically significant. The *company size* coefficient is also insignificant for all models. For model (45) and (46), the *company size* coefficient reveals the same direction as the results from Table 8-14, while for model (47) and (48) report inverse direction. Overall, the results for further analyses indicate that all the coefficient variables are behave in the same direction as the main results. These findings suggest that the further analyses, the robust standard errors results, are support the main results for the first hypothesis that the market liquidity is positively related to the disclosure score from both the disclosure index instrument and the analysts rating instrument.

Compared Table 8-15 and Table G-2

For the further analyses, the results provided in Table G-2, the regression results of models (49) - (53) do not show a good fit for the model. The adjusted R squared range from 3.4 to 8.8 percent. Similar to models (45) – (48), only three out of five coefficients of the control variables; *trade size, share price* and *return volatility*, are significant with p-values less than 0.1 and are consistent with the results in Table 8-15. The coefficient of *trade frequency* and *company size* report no statistically significant for all models. Only the coefficient of *company size* from model (53) that reveals inverse direction from the main results from Table 8-15. Overall, the results from the further analyses, are support the main results for the second hypothesis that the relation between the market liquidity and the disclosure score among the detailed categories for each information section varies, and the voluntary information from the strategic section still reveal the highest impact on the market liquidity.

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Compared Table 8-16 and Table G-3

For the further analysis, the result provided in Table G-3, the adjusted R^2 for the regression model (54) is 6.9 percent. Two of the five coefficients on control variables are significant with p-values less than 0.1. The coefficients on *share price* and *return volatility* are statistically significant and behave in consistent with the result from Table 8-16. Although the coefficient of the *trade frequency, trade size* and *company size* show no statistically significant, they also reveal the similar signs to the results from Table 8-16. However, the result from model (54) shows that only the coefficients on public disclosure score reports statistically significant at the 5 percent level. Therefore, this result supports the main result for the third hypothesis that when the company discloses more information via the public disclosure channels, this will increase the market liquidity.

Compared Table 8-20 and Table G-4

For the further analyses, the results provided in Table G-4, the regression results of models (55) - (63) do not show a good fit for the model. The adjusted R squared range from 2.8 to 7.9 percent. Only three of the five coefficients of control variables; *trade size, share price* and *return volatility*, are significant with p-values less than 0.1 and the signs also follow the direction of the results in Table 8-20. For the coefficient on the level of disclosure score, although all estimation models show the positive relationship between the market liquidity and the disclosure score, only three models (56), (58) and (59) indicate statistically significant. For the coefficient on the audit firm size, the results from all models show no statistically significant at the 10 percent level, however, this variable has a positive relationship with the market liquidity. Therefore, these findings suggest that the robust standard errors results from the further analyses are support the main results for the fifth hypothesis, but still have no evidence to accept that market liquidity is positively related to audit firm size.

Table G-1: Regression of the effective relative bid-ask spread on disclosure score and control variables

$$SPREAD = \beta_0 + \beta_1 DS + \beta_2 TF + \beta_3 TSZ + \beta_4 SIZE + \beta_5 PR + \beta_6 PRVOL + \varepsilon \quad \text{Eq. (1)}$$

Variable	Model 45 (Overall)	Model 46 (Annual)	Model 47 (Public)	Model 48 (Private)
Disclosure score	**-.176**	**-.181**	**-.264**	**-.217**
	-1.91*	*-1.81**	*-2.08***	*-1.91**
Trade frequency	**-.002**	**-.001**	**-.041**	**-.036**
	-0.02	*-.01*	*-.30*	*-.27*
Trade size	**.116**	**.141**	**.060**	**.083**
	2.16**	*3.12****	*.89*	*1.36*
Company size	**-.007**	**-.021**	**.021**	**.006**
	-0.09	*-.25*	*.27*	*.08*
Share price	**-.908**	**-.874**	**-.685**	**-7.68**
	-2.06**	*-2.07***	*-1.75**	*-1.85**
Return volatility	**.860**	**.831**	**.678**	**.747**
	1.95*	*1.96**	*1.73**	*1.79**
N	100	100	100	100
Adjusted R^2	0.062	0.065	0.076	0.065
F	2.09*	2.16*	2.36**	2.16*
Breusch-Pacan	20.24***	29.83***	10.14***	9.82***
Jarque-Bera	2964.17[†]	2695.64[†]	3457.15[†]	3354.67[†]

*, ** and *** indicate significance at $p < .1$, $p < .05$, and $p < .01$ respectively
[†] indicate JB value higher than 9.21 and reject the null hypothesis of normality at 1 %

Notes: 1. Coefficient is shown in the upper line (bold line), and the lower line (italic line) shows White's (1980) adjusted *t*-statistics.
2. Jarque-Bera statistic, the critical value for the null hypothesis of normality distribution is 5.99 at the 5 percent significance level, and 9.21 at the 1 percent significant level.

SPREAD is the effective relative bid-ask spread, *DS* is variously the disclosure score; overall, annual, public, and private disclosure score, *TF* is the average number of transaction trades per day, *TSZ* is the daily average trade volume, *SIZE* is the market value of common equity, *PR* is the daily averages of bid and ask prices, and *PRVOL* is the standard deviation of daily share price.

Table G-2: Regression of the effective relative bid-ask spread on categories of information disclosure score and control variables

$$SPREAD = \beta_0 + \beta_1 DS + \beta_2 TF + \beta_3 TSZ + \beta_4 SIZE + \beta_5 PR + \beta_6 PRVOL + \varepsilon \quad \text{Eq. (1)}$$

Variable	Model 49 (All Part)	Model 50 (Str)	Model 51 (Non)	Model 52 (Fin)	Model 53 (Other)
Strategic	**-.294**	**-.244**			
	-2.50**	*-1.61***			
Non-financial	**-.250**		**-.0859**		
	-2.21**		*-.84*		
Financial	**-.184**			**-.058**	
	1.17*			*-1.13*	
Other channels	**-.048**				**-.0517**
	-.46				*-.64*
Trade frequency	**-.003**	**-.004**	**-.005**	**-.002**	**-.0003**
	-.03	*-.03*	*-.04*	*-.02*	*.000*
Trade size	**.115**	**.144**	**.126**	**.151**	**.134**
	1.98**	*3.34****	*2.69****	*3.57****	*2.36***
Company size	**.015**	**.015**	**.016**	**.048**	**-.027**
	.15	*.18*	*.16*	*.56*	*-.36*
Share price	**-.873**	**-.916**	**-.858**	**-.945**	**-.963**
	-2.10**	*-2.02***	*-2.08***	*-1.97**	*-1.99***
Return volatility	**.836**	**.852**	**.819**	**.887**	**.898**
	2.01**	*1.90**	*1.98**	*1.87**	*1.88**
N	100	100	100	100	100
Adjusted R^2	0.061	0.040	0.088	0.035	0.034
F	1.72*	1.68*	2.61**	1.61*	1.59
Breusch-Pacan	55.66***	9.61***	55.39***	10.97***	8.29***
Jarque-Bera	2243.30[†]	3304.97[†]	2199.55[†]	2985.56[†]	3078.53[†]

*, ** and *** indicate significance at p < .1, p < .05, and p < .01 respectively
[†] indicate JB value higher than 9.21 and reject the null hypothesis of normality at 1 %

Notes: 1. Coefficient is shown in the upper line (bold line), and the lower line (italic line) shows White's (1980) adjusted *t*-statistics.
2. Jarque-Bera statistic, the critical value for the null hypothesis of normality distribution is 5.99 at the 5 percent significance level, and 9.21 at the 1 percent significant level.

SPREAD is the effective relative bid-ask spread, *DS* is variously the disclosure score; strategic, non-financial, financial, and other disclosure score, *TF* is the average number of transaction trades per day, *TSZ* is the daily average trade volume, *SIZE* is the market value of common equity, *PR* is the daily averages of bid and ask prices, and *PRVOL* is the standard deviation of daily share price.

Table G-3: Regression of the effective relative bid-ask spread on public, private disclosure score and control variables

$$SPREAD = \beta_0 + \beta_1 DPUB + \beta_2 DPRI + \beta_3 TF + \beta_4 TSZ + \beta_5 SIZE + \beta_6 PR + \beta_7 PRVOL + \varepsilon \qquad \text{Eq. (2)}$$

Variable	Model 54 (Public & Private)
Public dis. score	**-.527**
	-2.02**
Private dis. score	**.259**
	1.30
Trade frequency	**.038**
	.29
Trade size	**.049**
	.71
Company size	**-.028**
	-.34
Share price	**-.639**
	-1.70*
Return volatility	**.637**
	1.69*
N	100
Adjusted R^2	0.069
F	2.06*
Breusch-Pacan	10.79***
Jarque-Bera	3467.78[†]

*, ** and *** indicate significance at p < .1, p < .05, and p < .01 respectively
[†] indicate JB value higher than 9.21 and reject the null hypothesis of normality at 1 %

Notes: 1. Coefficient is shown in the upper line (bold line), and the lower line (italic line) shows White's (1980) adjusted *t*-statistics.
2. Jarque-Bera statistic, the critical value for the null hypothesis of normality distribution is 5.99 at the 5 percent significance level, and 9.21 at the 1 percent significant level.

SPREAD is the effective relative bid-ask spread, *PUB* is public disclosure score, *PRI* is private disclosure score, *TF* is the average number of transaction trades per day, *TSZ* is the daily average trade volume, *SIZE* is the market value of common equity, *PR* is the daily averages of bid and ask prices, and *PRVOL* is the standard deviation of daily share price.

Table G-4: Regression of the effective relative bid-ask spread on disclosure score, audit firm size and control variables

$$SPREAD = \beta_0 + \beta_1 DS + \beta_2 AUD + \beta_3 TF + \beta_4 TSZ + \beta_5 SIZE + \beta_6 PR + \beta_7 PRVOL + \varepsilon \qquad \text{Eq. (4)}$$

Variable	Model 55 (Without)	Model 56 (Overall)	Model 57 (Annual)	Model 58 (Public)	Model 59 (Private)	Model 60 (Str)	Model 61 (Non)	Model 62 (Fin)	Model 63 (Other)
Disclosure score		**-.170**	**-.175**	**-.263**	**-.217**	**-.074**	**-.239**	**-.049**	**-.051**
		-1.62*	*-1.53*	*-2.06***	*1.91**	*-.82*	*-1.45*	*-1.05*	*-.65*
Trade frequency	**-.0002**	**-.002**	**-.001**	**-.040**	**-.036**	**-.03**	**-.005**	**-.002**	**-.0002**
	-.00	*-.02*	*-.01*	*-.31*	*-.27*	*-.03*	*-.04*	*-.01*	*-.00*
Trade size	**.147**	**.117**	**.141**	**.060**	**.083**	**.141**	**.126**	**.150**	**.133**
	3.73***	*2.29***	*3.20****	*.91*	*1.41*	*3.53****	*2.74****	*3.72****	*2.43***
Company size	**-.054**	**-.017**	**-.028**	**-.020**	**-.006**	**-.031**	**-.007**	**-.063**	**-.045**
	-.53	*-.16*	*-.25*	*-.20*	*-.06*	*-.28*	*-.06*	*-.61*	*-.48*
Share price	**-.870**	**-.866**	**-.847**	**-.684**	**-.768**	**-.860**	**-.821**	**-.872**	**-.878**
	-1.70*	*1.76**	*-1.78**	*-1.55*	*-1.65*	*-1.72**	*1.81**	*-1.71**	*-1.72**
Return volatility	**.813**	**.822**	**.806**	**.677**	**.747**	**.802**	**.786**	**.820**	**.821**
	1.74*	*1.70**	*1.71**	*1.55*	*1.61*	*1.64*	*1.74**	*1.64*	*1.64*
Auditor	**-.066**	**-.033**	**-.022**	**-.0009**	**.0002**	**-.046**	**-.029**	**-.057**	**-.065**
	-.63	*-.34*	*-.20*	*-.01*	*.00*	*-.46*	*-.26*	*-.59*	*-.68*

Table G-4 : continued

Variable	Model 55 (Without)	Model 56 (Overall)	Model 57 (Annual)	Model 58 (Public)	Model 59 (Private)	Model 60 (Str)	Model 61 (Non)	Model 62 (Fin)	Model 63 (Other)
N	100	100	100	100	100	100	100	100	100
Adjusted R^2	.036	.052	.055	.066	.055	.031	.079	.028	.028
F	1.62	1.79*	1.84*	2.00*	1.83*	1.45	1.23**	1.41	1.41
Breusch-Pacan	7.44***	17.81***	27.84***	10.10***	9.83***	7.9***	53.22***	8.43***	5.77**
Jarque-Bera	3448.46†	3337.32†	3012.9†	3720.09†	3626.8†	3436.36†	2471.47†	3445.59†	3558.63†

*, ** and *** indicate significance at $p < .1$, $p < .05$, and $p < .01$ respectively
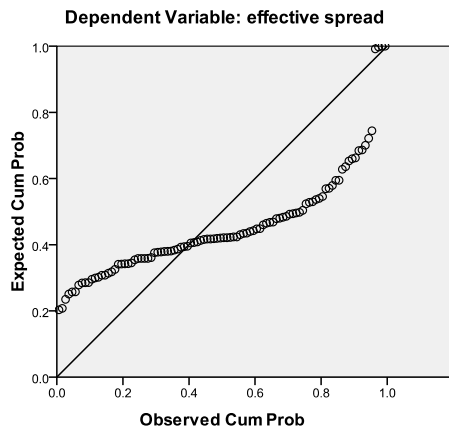† indicate JB value higher than 9.21 and reject the null hypothesis of normality at 1 %

Notes: 1. Coefficient is shown in the upper line (bold line), and the lower line (italic line) shows White's (1980) adjusted *t*-statistics.
2. Jarque-Bera statistic, the critical value for the null hypothesis of normality distribution is 5.99 at the 5 percent significance level, and 9.21 at the 1 percent significant level.

SPREAD is the effective relative bid-ask spread, *DS* is variously the disclosure score; overall, annual, public, private, strategic, non-financial, financial, and other disclosure score, *AUD* is auditor, *TF* is the average number of transaction trades per day, *TSZ* is the daily average trade volume, SIZE is the market value of common equity, *PR* is the daily averages of bid and ask prices, and PRVOL is the standard deviation of daily share price.

Histogram

Dependent Variable: effective spread

Mean =-1.30E-16
Std. Dev. =0.964
N =100

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: effective spread

Scatterplot

Dependent Variable: effective spread

Figure G-1: the residuals graph and plots for the estimation model when untransformed data

Histogram

Dependent Variable: effective spread in reciprocal

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: effective spread in reciprocal

Scatterplot

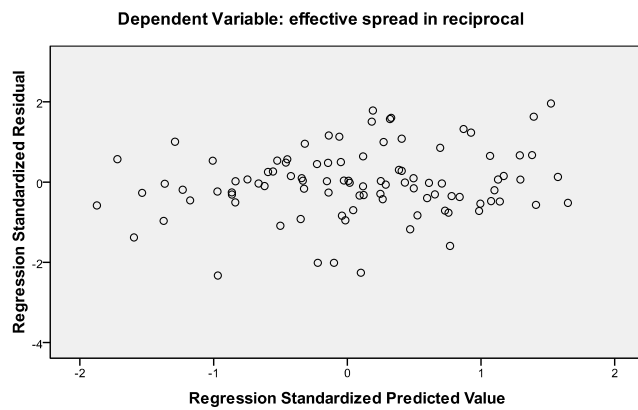**Dependent Variable: effective spread in reciprocal**
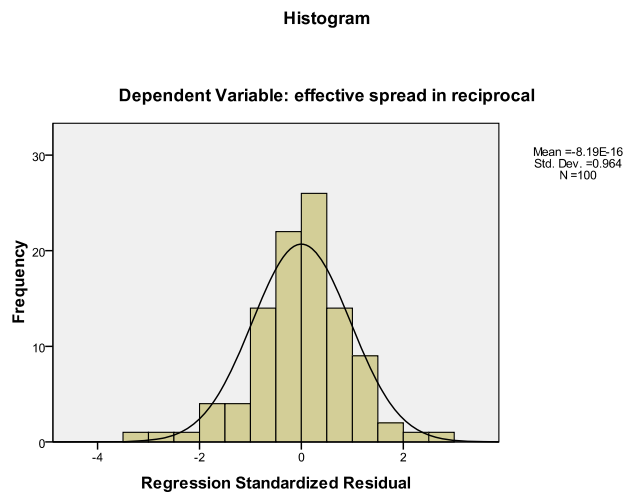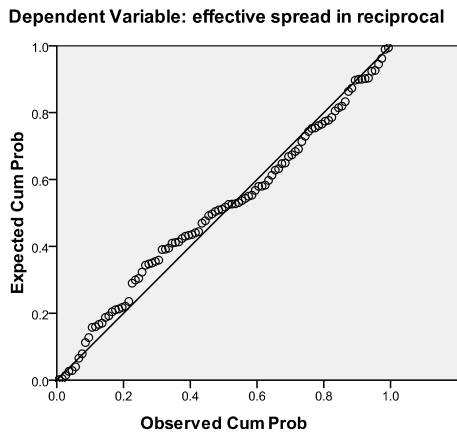
Figure G-2: the residuals graph and plots for the estimation model when transformed data

Appendix H: Insider trading cases in Thailand[24]

SEC News Release No. 20/2007

Tuesday, March 13, 2007

OISHI insider trading offense

Bangkok, March 13, 2007 – The Settlement Committee appointed by the Minister of Finance under Section 317 of the Securities and Exchange Act B.E. 2535 (1992) imposed a penalty fine of 1,494,615.92 baht on Udomsak Chakreyavanich for insider trading of shares of OISHI Group Plc. (OISHI) on December 13, 2005.

The SEC's probe revealed that Udomsak, who was then president of Asia Plus Securities Plc., the financial advisor of OISHI on share acquisition, had used non-public information to which he had access by virtue of his position to purchase OISHI shares, taking advantage of the investing public for his own or other persons' benefit in violation of Section 241 and liable to the penalties under Section 296 of the Act.

Insider trading, especially when material information is acquired by virtue of professional positions, is illegal. Such unfair misconduct is a prohibited characteristic of securities company directors.

Udomsak no longer holds any executive positions at any securities companies.

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[24] Source: www.sec.or.th

SEC News Release No. 44/2007

Friday, June 15, 2007

Settlement Committee imposes fines on persons involved in trading MATI shares based on material nonpublic information

Bangkok, June 15, 2007 – The Settlement Committee appointed by the Minister of Finance under Section 317 of the Securities and Exchange Act of 1992 (SEA) imposed fine penalties on Paiboon Damrongchaitham and Pacharee Manoonpanich in the amounts of 31,776,785.64 baht and 333,333.33 baht, respectively for insider trading of shares of Matichon Public Company Limited (MATI).

The SEC's probe revealed that during June - September 2005, Paiboon, Chairman of the Board of Directors of GMM Media Public Company Limited (GMMM), had been involved in the trading of MATI shares, which consummated on the Exchange under the account of Pacharee and several other accounts, based on the material nonpublic information that GMMM was planning to takeover MATI.

Paiboon was found in violation of Section 241 of the SEA and Pacharee was charged as an aider and abettor under Section 241 of the SEA and Section 86 of the Criminal Code.

The offenders agreed to enter into the settlement process and the Settlement Committee then ordered Paiboon and Pacharee to pay the aforementioned fines.

SEC News Release No. 8/2009

Tuesday, January 20, 2009

SEC fines nine offenders for malpractices involving TWZ, WIN and ASCON shares

Bangkok, January 20, 2009 – The SEC's Settlement Committee appointed by the Minister of Finance under Section 317 of the Securities and Exchange Act of 1992 (SEA) resolved to impose fines on nine offenders for manipulating share prices of TWZ Corporation Plc. (TWZ) and Wyncoast Industrial Park Plc. (WIN) and insider trading of Ascon Construction Plc. (ASCON) shares with details as follows:

TWZ price manipulation: Following the Stock Exchange of Thailand (SET)'s report on irregular trading of TWZ shares from December 13, 2005 to May 8, 2006 (97 working days), the SEC probed into the case and found that Yanyong Akrajindanon, Eak Putagotirat, Arunya Silathong and the other two persons, with Piyanuj Rungkasiri as the accomplice, had entered into a continuous trading of TWZ shares, through their accounts and others, causing its price to be inconsistent with the normal market conditions and luring the general public into buying and selling TWZ shares. The course of action is considered a violation of Section 243 (2) of the SEA and Section 83 of the Penal Code. With the penal provisions prescribed in Section 296 of the SEA, the Settlement Committee imposed a total fine of 47,637,551.16 baht on (1) Yanyong (29,461,550.99 baht), Eak (14,430,242.68 baht), Arunya (3,245,757.49 baht) and Piyanuj (500,000 baht). The other two persons, suspected of having involved in the course of action, are still under legal proceedings.

WIN price manipulation: In another SEC's investigation which probed into the abnormal trading of WIN shares during March 10-24, 2006 (11 working days), it was found that Suwanna Maneesawat, Pornpat Sripornpat and Thiparat Suthamsamai had collusively traded WIN shares in concealment, causing its prices to be inconsistent with the normal market conditions, to mislead and induce the general public into buying and selling such shares. The act is considered a contravention of Section 243 (1) (2) in conjunction with Section 244 (2) (3) of the SEA and Section 83 of the Penal Code, with liabilities prescribed in Section 296 of the SEA. The Settlement

Committee therefore imposed a total fine of 1,500,000 baht on the three offenders or 500,000 baht each.

ASCON insider trading: According to the SET's report and the SEC's in-depth investigation, ASCON Chief Executive Officer Pattanapong Tanumathaya and Director Sirichai Rasameechan were found to have purchased ASCON shares, through their accounts and others, using the information about the company's capital increase which is material to changes in its share price but had not yet been disclosed to the public. Their act is deemed securities trading by using inside information to take advantage of others which is a contravention of Section 241 and subject to liabilities under Section 296 of the SEA. As such, the Settlement Committee imposed fines on Pattanapong and Sirichai in the amount of 530,494.98 baht and 500,000 baht respectively. Sirichai was also subject to a further fine of 201,625 baht for failure to report his securities holding, which is a violation of Section 59 with liabilities prescribed in Section 275 of the SEA.

Appendix I: Further analysis

Market liquidity and information disclosure in English

This further analysis investigates whether there is an association between the extent to which listed companies disclose information in English through their website and the liquidity of shares traded on the Stock Exchange of Thailand. ***H: Market liquidity is positively related to information disclosure in English.*** The above hypothesis is tested using the following model:

$$SPREAD = \beta_0 + \beta_1 WEB + \beta_2 DS + \beta_3 TF + \beta_4 TSZ + \beta_5 SIZE + \beta_6 PR + \beta_7 PRVOL + \varepsilon \quad \text{Eq. (9)}$$

where *RE_SPREAD* is the reciprocal of the effective relative bid-ask spread and *WEB*[25] is the extent to which each company communicates its information in English. All control variables are as defined previously. Table I-1 presents the results of estimating equation (9) for the further analysis, where the reciprocal of the effective relative bid-ask spread is the dependent variable and information disclosure in English is the independent variable.

The regression results show a good fit for the model. The adjusted *R* squared (Adj R^2) of 31.22 percent suggests that the effective relative bid-ask spread variation is explained by the disclosure score, the information disclosure in English and control variables. Four out of five coefficients of the control variables are significant with p-values less than 0.01. The coefficients for *trade frequency* and *Share price* are positive and significant. Also, consistent with expectations, *return volatility* has a negative coefficient which is significant. The *trade size* coefficient is negative and significant, while the *company size* coefficient is positive but insignificant. The coefficients for disclosure (*DS*) is behave as predicted, positive (.209 with a t-statistic of 2.08) with the level of significant better than 5 percent. The coefficients for the information disclosure in English (*WEB*) is also as expected, positive (.039 with a t-statistic of 0.350), but shows no statistically significant relationship with the dependent variable. This finding does not support the hypothesis nor warrant further testing, as no statistically significant relationship between stock market liquidity and information disclosure in English exists, although the coefficients are in the predicted

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[25] WEB is measured as an indicator variable that takes the value of one if the company disclosed information in English through its web site, and zero otherwise.

direction. The skewness of the data may explain this, with 82 of 100 companies disclosing information in both Thai and English through their website (the remaining 18 companies disclosed information in Thai only).

Table I-1: Regression of the reciprocal effective relative bid-ask spread on information disclosure in English

$$SPREAD = \beta_0 + \beta_1 WEB + \beta_2 DS + \beta_3 TF + \beta_4 TSZ + \beta_5 SIZE + \beta_6 PR + \beta_7 PRVOL + \varepsilon \quad \text{Eq. (9)}$$

Variable	Model 64
Disclosure score	**.209**
	2.08**
Information disclosure in English	*.039*
	.35
Trade frequency	**.322**
	3.20***
Trade size	**-.161**
	-2.63***
Company size	**.96**
	1.12
Share price	**1.106**
	3.77***
Return volatility	**-.969**
	-3.55***
N	100
Adjusted R^2	.3122
F	7.42***
Breusch-Pacan	0.48
Jarque-Bera	4.891

*, ** and *** indicate significance at p < .1, p < .05, and p < .01 respectively
[†] **indicate JB value higher than 9.21 and reject the null hypothesis of normality at 1 %**

Notes: 1. Coefficient is shown in the upper line (bold line), and the lower line (italic line) shows White's (1980) adjusted *t*-statistics.
   2. Jarque-Bera statistic, the critical value for the null hypothesis of normality distribution is 5.99 at the 5 percent significance level, and 9.21 at the 1 percent significant level.

SPREAD is the reciprocal of the effective relative bid-ask spread, *DS* is the disclosure score, *WEB* is the extent to which each company communicates its information in English, *TF* is the average number of transaction trades per day, *TSZ* is the daily average trade volume, *SIZE* is the market value of common equity, *PR* is the daily averages of bid and ask prices, and *PRVOL* is the standard deviation of daily share price.

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