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INFORMATION FLOW AND CORPORATE GOVERNANCE IN THAILAND

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วิทยานิพนธ์ฉบับนี้ศึกษาเกี่ยวกับความสัมพันธ์ระหว่างกระแสข้อมูลและบรรษัทภิบาลของบริษัทที่จดทะเบียนในบริษัทหลักทรัพย์ระหว่างปี 2543-2550 ศึกษาโดยใช้ดัชนีชี้วัดธรรมาภิบาลที่ครอบคลุมแง่มุมหลักของบรรษัทภิบาลอย่างครบถ้วน อันได้แก่ โครงสร้างของคณะกรรมการ การขัดแย้งทางผลประโยชน์ บทบาทของคณะกรรมการ สิทธิผู้ถือหุ้น และการเปิดเผยข้อมูลและความโปร่งใส วัดกระแสข้อมูลโดยใช้ความเสี่ยงจำเพาะในบริษัทและความน่าจะเป็นของนักลงทุนที่มีข้อมูล ผลวิจัยแสดงให้เห็นว่าบรรษัทภิบาลมีความสัมพันธ์เชิงลบกับกระแสข้อมูลภายในบริษัท บริษัทที่มีบรรษัทภิบาลที่ดีมีกระแสข้อมูลภายในสู่ตลาดน้อยแต่มีข้อมูลสาธารณะสูง บรรษัทภิบาลที่ดีทำให้นักลงทุนมีกระแสข้อมูลภายในลดลง และลดโอกาสที่ไม่เท่าเทียมกันในการรับข้อมูล นอกจากนี้การศึกษาครั้งนี้แสดงให้เห็นว่าโครงสร้างของคณะกรรมการ การขัดแย้งทางผลประโยชน์ บทบาทของคณะกรรมการเป็นดัชนีย่อยของบรรษัทภิบาลที่มีความสัมพันธ์เชิงลบกับกระแสข้อมูลภายใน โดยที่ดัชนีย่อยอื่นๆไม่มีความสัมพันธ์กับกระแสข้อมูล

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This study investigates the relationship between information flow and corporate governance of Thai listed company during 2000-2007. The study uses corporate governance indices which capture major aspects of corporate governance that are board structure, conflict of interest, board responsibility, shareholder rights, and disclosure and transparency. The measurement of private information flow will use firm-specific return variation and Probability of information based trading (PIN) as alternatives of information flow. The results show that corporate governance is negatively related with private information flow. Strong corporate governance reduces private information flow relative to the public information. The better corporate governance will alleviate information based trading and reduce informational asymmetries. Moreover, this study indicates that board structure, conflict of interest , board responsibility are the sub-indices of corporate governance that have a negative relationship with private information flow while the rest sub-indices are not influence with information flow.

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Chapter I
Introduction

Background of the study

Thailand faced a financial crisis in 1997 that attributed to poor corporate governance. The Bank of Thailand and the SET did not have corrective measures on financial performance. In addition, auditors did not announce real information about the financial performance of business. In 2002, Thai Government significantly focuses to improve to be good corporate governance. Until now corporate governance practices are in the spotlight throughout the financial and investment markets. Good corporate governance has been added to the list of potential benefits. In emerging markets, a difficulty in studying corporate governance is the lack of quality information, where there are fewer disclosure rules, poor protection of minority shareholder rights, much less enforcement of insider trading laws, unequal treatment of foreign and domestic shareholders, and a generally underdeveloped legal and regulatory environment. Many researchers found that the two major problems of corporate governance in Thailand are low transparency and the lack of disclosure (Alba, Clasessens and Djankov, 1998; Alba, Hernandez and Klingebiel, 1999; Zhuang et al., 2000).The better corporate governance resulted from improved internal corporate governance mechanisms and enhanced accounting standards, information disclosure, and auditing standards(Limpaphayom and Connelly, 2004). New and up-dated rules, new and revised laws, and increased regulation are crucial of improved corporate governance. Process related activities like monitoring, supervising, enforcing, and higher awareness have increased.

The recently study shows by Ferreira and Laux (2007), the study shows how governance provision and informed trading interact to influence the incorporation of information into stock prices. Paper studies the relationship of corporate governance policy and firm specific variation in stock return. A stream of research establishes that firm specific variation and information flow are closely associated. Ross (1989) shows that firm specific variation is directly related to the rate of information flow arrival as an important consequence of arbitrage free economics. Roll (1988) provides evidence that idiosyncratic price changes mainly reflect private information being incorporated into stock price by informed trading .Thus firm specific variation is a good candidate as a measure of information flow, and especially for private information flow[1]. In this

study also indicates several alternative measures of information flow such as the stock's turnover , the PIN (the probability of information-based trading) measure of Easley, Hvidkjaer, and O'Hara(2002) future earnings response coefficient (FERC) and future earnings incremental explanatory power (FINC) measures of Durnev et al. (2001).The study investigates that the greater the firm specific variation indicates more informed stock pricing and support the first conjecture of Roll (1988) that firm-specific variation reflects arbitrageurs trading on private information. The result from this study indicates that firms with fewer anti-takeover provisions display higher levels of firm specific variation, trading activity, private information flow, and more information about future earning in stock price.

Statement of Problems

The effect of corporate governance on equity price and distribution of return is the important and interesting issue in corporate finance. Corporate governance mechanism such as shareholder lawsuits, executive options, institutional investor pressure, and the market for corporate control depends on stock price. These studies point out that improvement in corporate governance mechanisms reduce information asymmetries and add to the forecasting abilities of analysts. So, governance can directly influence equity price by the flow of the information. In the study of Michel Magnan shows that disclosure degree of uncertain information is positively associated with stock return volatility. More disclosure of uncertain information can be associated with excess stock return volatility. Firms with high information uncertainty face a dilemma. While no or less information disclosure can lead high information asymmetry. The prior literature largely suggests that more disclosure is a good thing to do. In order to investigate the linkage between information flow and corporate governance in Thailand, it is required to find the empirical result in this study.

[1] In effect, we defined information events as public if they do not affect trading. Such events may cause price changes, but little or no trade should be generated by a truly public information event. To the extent that seemingly public information events affect trade, they have a private component (understanding how to use this information)

Objectives of the study

This study has two main objectives as following:

- To examine the relationship between corporate governance and information flow: investigate whether the information is influenced by corporate governance is mostly industry-level or firm-specific. A related but broader question is which sub-indices of corporate governance that produce information especially private information. Answering these questions should help researchers and practitioners deeply better understand about characteristics of corporate governance in Thailand in order to improve their governance performance.
- To reinvestigate how corporate governance is related to additional measures of information flow intensity.

Contributions

Prior study of Ferreira and Laux (2007) uses anti-takeover index to study the effect of anti-takeover provision on an information flow in U.S. that cannot be generalized to Thai market. There are important differences in governance systems across economies. The takeover market is very active in the U.S. so that the corporate openness to market control is an effective governance device in the country. On the other hand, the impact of anti-takeover provisions is weak outside the U.S. because the takeover events are rare in these locations as a result of the firm ownership concentration (see Denis and McConnell (2003) for a review). Moreover, Thailand has recently changed the rule in 2008 Act by releasing antitakeover provision in order to alleviate the effect of Hamburger crisis on November 2008 and assign to improve corporate governance in Thailand. Then to study the relationship between antitakeover provision and information flow in Thai market can not be used because it impossibly compared the result of these changes due to lack of data of release the antitakeover in Thai market. Instead of focusing on the anti-takeover provision policy on information flow as in the paper of Ferreira and Laux (2007).Therefore, in this paper I seek to investigate the conclusion between corporate governance and information flow by extending the corporate governance index into five components and using Thai listed company. The Corporate Governance Index (CGI) originally organized by Ananchotikul (2007) and developed by Miss Suchon Eamsherangkoon as the proxy of corporate governance. CGI captures all major aspects of corporate governance and

divided into five governance components; 1) Board structure 2) Conflict of interest 3) Board responsibility 4) Shareholder rights 5) Disclosure and transparency.

To examine the effect of corporate governance on information flow, I will emphasize the effect of all major aspects of corporate governance index on an information flow. I use CGI as the proxy of corporate governance in Thailand. In the past, there are various corporate governance proxies such as shareholder rights (Dittmaet al.; 2003), (Ozkan, 2004), anti-takeover G-Index (Harford et al.; 2008), and board and audit committee characteristics (Chtourou et al.; 2001, Bao Xie; 2001, Klein; 2002 and Frank Yu; 2006), which these proxies are not enough. Hence, I will use CGI based on Ananchotikul (2007) and Miss Suchon Eamsherangk (2008) as the proxy of corporate governance CGI in Thailand to capture all aspects of corporate governance and also developed the CGI to be better captured the main aspects. The overall index is a weighted average of the scores given to the five components; higher scores indicate better governance practice.

Organization of the study

The study is divided into 6 chapters. This paper begins with Chapter1 introducing the research background and statement of problems which relating to the area of study, followed by the objective of research, and also contributions. Chapter 2 provides overview of a number of literatures which contains the previous works of this study**.** This chapter also reviews other research that related to other perspectives in the same area. Chapter 3 shows data description and hypothesis development. Chapter 4 presents the explanation of the methodology for this research, which includes corporate index construction, estimation of information flow and model specification, and also descriptive statistic, will be presented in this chapter. Chapter 5 shows the result and analyzes the results in order to achieve the objectives. Chapter 6 is conclusion to summarize this study.

Chapter II

Literature Reviews

This section will present a review of related literature and previous studies underlying the framework of this study. Related literature review will be separated into 2 parts;

2.1 The determinant in informativeness of stock price

The variation of stock return can be decomposed into three different components that are market related variation, industry related variation and firm specific variation. The first two components measure systematic variations. The last one captures firm specific variation that used to measure of informativeness.

To measure the informativeness of stock prices, Collins, Kothari, and Rayburn (1987), and others in the accounting literature, regard such predictive power as gauging the "information content" of stock prices. In this sense, stock prices have greater information content when firm-specific variation is a larger fraction of total variation. In addition, Grossman and Stiglitz (1980) predict that a lower cost of private information leads to a higher intensity of informed trading, and hence to what they call "more informative pricing." They suggest that, in a given time interval and all else equal, higher firm-specific variation stems from more intensive informed trading due to a lower cost of information, and hence indicates a more informative price. By following Morck, Yeung and Yu (2000) consider the magnitude of firm-specific return variation. The results are shown that firm-specific return variation is high in countries with well developed markets and low in emerging markets. They also indicate that in well developed financial markets, traders are more motivated to gather information on individual firms, and thus prices reflect more firm-specific information therefore stock variation occurs because of trading by investors with private information. According to Roll (1988), his argument indicates that prices move upon new information, which is capitalized into prices in two ways. The first is through a general revaluation of stock values following the release of public information, such as unemployment statistics or quarterly earnings. The second is through the trading activity of risk arbitrageurs who gather and posses private information. This argument shows that firm specific variation is largely unassociated with public announcements, and argues that firm-specific return variation is therefore chiefly due to trading by investors with private

information. Moreover, there are several papers shown a growing empirical literature links firm specific variation to stock price informativeness, e.g., Durnev et al. (2001), and Bushman, Piotroski, and Smith (2002). These papers accept and use firm-specific return variation as a proxy for stock price informative.

Consider decomposing the variation of a firm's return into a systematic portion, explained by market and industry return, and a firm-specific residual variation. Durnev, Morck, Yeung and Zarowin (2003) extend the argument of Roll (1988), to gauge the measure of price informativeness where stock price informativeness measures are base on Collin et al (1994). The study defines price informativeness as how much information stock price contain about future earnings, which estimate from a regression of current stock returns against future earnings. They find the positive relation between the informativeness measures: The earning response, future earning response coefficient (FERC), future earning incremental explanatory power (FINC) and relative firm-specific stock return variation. The conclusion is a higher firm specific return variation as a fraction of total signals more intensive informed trading and, therefore, more informative pricing. Consequently, reflect more efficient stock markets. Moreover, Durnev, Morck, and Yeung (2004) support to the view that firm-specific return variation gauges the extent to which information about the firm is quickly and accurately reflected in share prices. It can be interpreted as evidence that more informative stock prices facilitate more efficient corporate investment. Wurgle (2000) also obtains a similar result in a cross-country analysis.

Therefore, from all evidence as I mentioned above, I believe these conceptual arguments and empirical results justify the use of firm-specific return variation as an indicator of timely and accurate incorporation of firm-specific information into stock prices.

2.2 Corporate Governance and informativeness of stock prices

The study of Durnev, Morck, Yeung, and Zarowin (2003) shows that corporate governance mechanism such as shareholder lawsuits, executive options, institutional investor pressure, and the market for corporate control depends on stock price. Informed stock prices convey meaningful signals to management about the quality of their decision. They also convey meaningful signals to the financial markets about the need to intervene when management decisions are poor.

Jin and Myers (2006) show that stocks in countries where firms are more opaque from an investors' perspective have higher average R^2s. These studies' findings suggest that countries with lower stock return synchronicity should have more informative stock prices, since strong property rights and greater transparency promote informed trading, which facilitates the capitalization of firm-specific information into stock prices.

The recently study of Ferreira and Laux (2007) indicates that firm with fewer anti-takeover provision policy display higher levels of idiosyncratic risk , trading activity, private information flow and more information about future earnings in stock price. And there are also tight –link between openness to the market for corporate control and openness of private information flow to the market. Moreover, openness to the market for corporate control and informed trading by institutions interact to influence to the extent to which stock prices accurately and in a timely fashion incorporate information.

Jing Yu (2008) studies in an international study in stock price informativeness and corporate governance. This paper performs a cross-country analysis of the relationship between corporate governance and the amount of private information in stock price. The results show that anti-takeover and audit ratings, while not board quality, are positively related to stock price informativeness. In countries with poor legal environment, company corporate governance plays a more significant role in increasing stock price informativeness.

Daniel, Miguel and Clara (2008) develop and test the hypothesis that private information incorporated into stock prices affects the structure of corporate boards. They find that stock price informativeness, as measured by the probability of informed trading (PIN), is negatively related to board independence. In particular, when firm-specific knowledge is important, a board that is too independent may fail to obtain crucial information. Perhaps there are few informed insiders (Raheja (2005)), or perhaps the CEO refuses to communicate with the board (Adams and Ferreira (2007)). Therefore, they expect that costs associated with the acquisition of firm-specific knowledge may affect the relationship between board structure and price informativeness. Moreover, giving that the board size is defined by the number of directors on the board. Larger boards represent a larger pool of expertise and thus provide better advice to managers that may substitute for the information provided by stock markets. On the other hand, larger boards are usually considered less effective at

monitoring due to coordination and free-riding problems. The study found that price informativeness is negatively related to the number of board meetings and also negatively related to board size. Moreover, Easley et.al. (1998) also estimate the probability of information-based trading (PIN) for a sample of NYSE stock that differs in analyst stock. The analysis uses the information in trade data to estimate the probability of informed trade. The result shows that the overall high analyst stocks encounter with a lower probability of information-based trading.

Kee H. Chung, John Elder, and Jang-Chul Kim (2009) investigate the relationship between stock market liquidity and corporate governance. The results show that better governance indicate narrower quoted and effective spread, higher market quality index, smaller price impact of trades , and lower probability of information-based trading. Strong corporate governance will reduce information asymmetries.

Chapter III

Sample and Data Description

3.1 Sample selection

This paper examines the relationship between corporate governance and information flow by using the sample over the period 2000 – 2007 as many as 142 Thai firms listed in Stock Exchange of Thailand (SET). To do this, I require a measure of corporate governance and a measure of the informativeness of stock prices.

3.2 Source of data

I use the sample over the period 2000 – 2007 of Thai firms listed in Stock Exchange of Thailand. I collect the financial data from DataStream. Buy and Sell orders are obtained from Thai stock market intraday data. While, CGI is obtained from the prior research (Corporate Cash Holdings, Earnings Management and Corporate Governance: Evidence from Thailand by Suchon). CGI and sub-indices of CGI collect in each company from the mandatory Annual Disclosure Report (Form 56-1), company annual reports, corporate websites, the web-based SET Market Analysis and Reporting Tool (SETSMART), and the SET's Director Database.

3.3 Data Descriptive

Table 1 presents descriptive statistic for the control variables used of 142 Thai firms with 1,136 observations. This table provides statistics of the sample including mean, median, maximum, minimum, standard deviation of variables. The sample characteristics are over the period 2000-2007. Control variables in this study are motivated by Ferreira and Laux (2007). Our main analysis, in terms of financial data, the average firm of the sample has roe about 10%, leverage about 1%, and market to book about 1.238. The average size of this sample is about 20.906, dividend dummy has a mean of 0.726 and average of firm age is about 3.280.

Table 1
Descriptive statistic of control variables

This table reports mean, median, maximum, minimum and standard deviation of variables. The sample characteristics are in 142 firms over the period 2000-2007. Each variable has 1,136 observations. Control variables in this study are motivated by Ferreira and Laux (2007). A number of firm-level variables that may affect the quality of corporate governance are included: Return-on-equity (ROE) given by earnings before extraordinary items divided by the book value of equity. Leverage (LEV); leverage define, as the ratio of long-term debt item to total assets, Market-to-book (M/B); Market-to-book equity ratio, Market Capitalization (SIZE); log of market capitalization, Dividend dummy (DD); dividend dummy, which equals one if the firms pays dividends and zero otherwise, Firm age (AGE); log age: a period from registration to year *t*. All variables are winsorized at the bottom 1% level and top 1% level.

Variables	Mean	Median	Max	Min	Std.Dev
ROE	0.101	0.010	0.655	-0.670	0.177
LEV	0.010	0.026	0.855	0.000	0.154
M/B	1.238	0.890	10.995	-4.033	1.290
SIZE	20.906	20.800	26.371	17.535	1.560
DD	0.726	1.000	1.000	0.000	0.446
AGE	3.280	3.284	4.776	2.105	0.410

3.4 Hypothesis Development

The effect of corporate governance on equity price and distribution of return is the important and interesting issue in corporate finance. Governance can directly influence equity price by the flow of the information. The effective corporate governance rewards investors' efforts in analyzing the information, hence increasing the firm-specific information incorporated into stock price.

Board structure, since 1999, the SET has made two important corporate-governance requirements on Thai listed companies. The first one is at least one third of the board must be comprised of independent directors. The second one is requiring all listed firms to have an audit committee comprised of at least three independent directors. The definition of independent directors has also been revised to include non-employees, non-former executive, or not a relative of a current corporate executive of the company. In addition, the director must not have any business relations with the company. The Board of Directors is characterized by its level of independence that is proxied by the fraction of independent directors. More independent board is assumed to be costlier, but also generates more monitoring of the CEO. But sometimes CEOs and inside directors possess more firm-specific knowledge than outside directors (Fama and Jensen (1983)). A board that is too independent may fail to obtain crucial information. Moreover, giving that the board size is defined by the number of directors on the board. Larger boards represent a larger pool of expertise and thus provide better advice to managers that may substitute for the information provided by stock markets.

On the other hand, larger boards are usually considered less effective at monitoring due to coordination and free-riding problems.

Conflict of interest: the less conflict of interest, the fewer managers will conceal the information. They will not seek that information for their own benefits. If the company has less conflict of interest, the score of this sub index will be high which indicate as good corporate governance.

Responsibilities of the board, the board should ensure the integrity of the company's financial report and ensure proper disclosure and actively communicate with shareholders and stakeholders. Board should make timely provision of relevant information to the directors and provide education and adopt codes of conduct for directors. Board will meet specific responsibilities through financial statements, reporting regarding programs and operations, planning.

Shareholder Rights, all shareholders have the same voting rights and rights to dividend. Shareholders have the right to elect directors to represent them, shareholders are treated equally, and no individual shareholder or group of shareholders receives preferential treatment or has influence greater than their respective share of ownership. Shareholders should also be able to exert their influence over the board of directors and hold directors liable for breaches of their fiduciary duty. All of the major aspects of shareholders' rights: effective participation in decision-making, election of directors, allowable shareholder actions against directors, plus disclosure and transparency. The study by Eutelsat Communications guarantees to its shareholders the access to any information that could be of their interest: financial information or any other information related to events that could have substantial impact on the stock price.

Disclosure and transparency, financial transparency and disclosures are crucial to the success of corporate governance because regulators, investors and shareholders rely on financial reports to assess corporate performance and monitor management. Disclosure in annual reports and on company websites is likely to be important to foreign investors to encourage confidence in the corporate governance system. The more disclosure and transparency are, the more timely flow of information becomes. This statement is an important in corporate governance principle (OECD, 2004).

From these hypothesis developments, I will reexamine relationship in Corporate Governance, Sub-Index of Corporate with information flow by using listed Thai firms as the sample and state it in null form as follows:

Hypothesis: Corporate Governance is not associated with information flow.

Chapter IV

Methodology

To measure corporate governance, I will use CGI based on Ananchotikul (2006) as the proxy of corporate governance and to measure the informativeness of stock price, this paper will use firm-specific return variation as a proxy of information flow. To provide further evidence on this interpretation of firm-specific return variation, and to more completely test the information-flow hypotheses, I also investigate alternative measures of information flow that is the probability of information-based trading (PIN).

4.1 Corporate Governance Index Construction

To construct Corporate Governance Index (CGI), I use CGI data obtained form prior research base on the approach of Ananchotikul (2007). To get this index, collect information of Thai listed companies from publicly source, including the mandatory Annual Disclosure Report (Form 56-1), company annual reports, corporate websites, the web-based SET Market Analysis and Reporting Tool (SETSMART), and the SET's Director Database,. The obtained data from 87 questions will be observed in to five governance components in order to avoid bias from self-evaluated questionnaire: 1) Board Structure 2) Conflict of Interest 3) Board Responsibilities 4) Shareholder Rights, and 5) Disclosure and Transparency. Scores are given to each of the governance items and taking a weighted average of the sub indexes to create CGI. Consequently, CGI runs from 0 to 100 and times 100 with higher values indicating better corporate governance. The criteria are based on corporate governance best practice of SEC.

Board structure, one of the sub-indices of corporate governance index, contains the questions that reflect the structure of board of director such as size, numbers of board of director, numbers of audit committee, numbers of directors who also managers. Good corporate governance on board structure will allow directors be able to make decisions independently for the best interest of companies and shareholders. Next sub-index, Conflict of interest, focuses on power of chairman, CEO, and directors, and existence of committees. Chairman and CEO should not be same person as well as chairman should not be a controlling-family member to avoid power overwhelming of one person. The committees can also help solve conflict of interest

problem such as remuneration committee makes transparency for setting board compensation. For board responsibilities index, the questions concentrate on basic responsibilities that directors must act or support as mentioned in corporate best practice of SEC such as existence and numbers of board meetings per year, existence of audit committee meeting, and existence of directors evaluation system. Questions of the forth sub-index, shareholder rights, show basic rights that shareholders should have such as if firm has annual shareholder meeting, what voting rule is, what the minimum dividend according to dividend policy is. The last sub-index, disclosure and transparency, shows the level of transparency the firms have by examine if firms disclose material information such as board compensations, directors and managers shareholdings, and related party transaction. Full detail of the questionnaire is showed on Appendix.

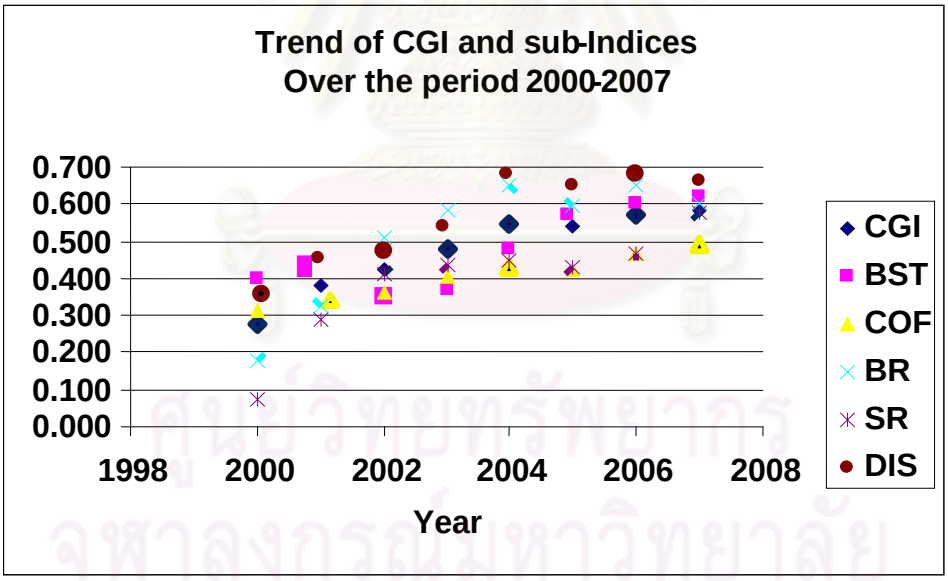
Table 2 presents mean, median, maximum, minimum and standard deviation of the level CGI and its sub-indices over period 2000-2007: A. Board Structure, B. Conflict of Interest, C. Board Responsibility, D. Shareholder Rights and E. Disclosure and Transparency. The sub-indices are shown in percentage of their maximum score of data collected through questionnaire. Each sub-index is given a weight of 20%, 25%, 20%, 10% and 25%, respectively, to calculate corporate governance index. The maximum score of each column is 1, the strongest corporate governance of a firm. The data can be interpret that over period 2000-2007, The overall CGI ranges from 0.131 to 0.852 with a mean score 0.459. The highest average score of sub-indices of Thai firms in my sample is C. Board responsibility (0.510), while the lowest one is D. Shareholder right (0.395), respectively. In figure 1, the data can be interpreted that on average corporate governance index and sub-indices have an increasingly positive trend.

Table 2
Descriptive statistic of overall corporate governance index (CGI) and sub-corporate governance indices

This table shows corporate governance index and sub-corporate governance indices statistics from the over period 2000 – 2007. The sub-indices are shown in percentage of maximum raw score of each index. Corporate governance index = weighted average of the sub-indices; A. Board Structure, B. Conflict of Interest, C. Board Responsibility, D. Shareholder Rights and E. Disclosure and Transparency; 20%, 25%, 20%, 10% and 25%, respectively. Corporate governance index runs from 0 – 1, the higher, the better corporate governance of firms.

Variable	Mean	Median	Max	Min	Std.Dev
Overall CGI	0.459	0.452	0.852	0.131	0.132
Sub indexes:					
A: Board Structure	0.422	0.333	1.000	0.000	0.193
B: Conflict of Interest	0.405	0.355	1.000	0.084	0.137
C: Board Responsibility	0.510	0.533	0.984	0.033	0.213
D: Shareholder Rights	0.395	0.419	0.843	0.000	0.199
E. Disclosure Transparency	0.459	0.452	0.852	0.131	0.132

Figure 1
Trend of CGI and sub-corporate governance indices over the period 2000-2007



4.2 Measuring Firm-specific Return Variation

To measure Firm-specific information as a proxy of information flow, especially private information[2] based on the approach of Ferreira and Laux paper. Ferriera and Laux (2007) estimate the firm specific information by using the measure of firm's firm-specific variation relative to the market-wide variation. They use the market model in the estimation. The concept in the paper of Ferriera and Laux (2007) using the daily return to estimate the firm specific variation in each month, these monthly data are not conforming to our tests which based on the annual data (such as the governance index, and other control variables). Therefore, I study firm specific information by using daily return data to estimate the yearly firm specific variation instead. The daily excess return of stock i is computed as the following equations;

$$r_{i,d} = \ln\left(\frac{RI_{i,d}}{RI_{i,d-1}}\right) - r_f \qquad (1)$$

where $RI_{i,d}$ is total return index of stock i on day d and log transformation is applied in the calculation to reduce skewness and kurtosis distribution. Then subtracting the raw data with daily interbank rate (overnight) as a proxy for risk free rate to obtain the daily excess returns of stock i on day d ($r_{i,d}$).The yearly variance of stock i on year t calculate from daily excess return as follow;

$$Var(r_{i,t}) = D_i * Var(r_{i,d}) \qquad (2)$$

where D_i is the number of trading days in year t. $Var(r_{i,d})$ is the daily variance of stock i's excess return. The measure of firm specific variation is based on a regression projection of stock returns on the returns of the market index. Consider the case of the market model. For stock i:

$$r_{i,d} = \alpha_i + \beta_i r_{m,d} + \varepsilon_{i,d} \qquad (3)$$

With E ($\varepsilon_{i,d}$) = Cov ($r_{m,d}$,$\varepsilon_{i,d}$) = 0. In equation (3), $r_{i,d}$ is the excess return of stock i on day d, and $r_{m,d}$ is the value- weighted excess market index return on day d. and $\beta_i = \sigma_{im} / \sigma^2_m$, where $\sigma_{im} \equiv Cov(r_{i,d}, r_{m,d})$, $\sigma^2_m \equiv Var(r_{md})$,

Take variance to (3);

$$Var(r_{i,d}) = \beta_i^2 Var(r_{m,d}) + Var(\varepsilon_{i,d}) \qquad (4)$$

---

[2]Private information is known only to the informed traders, who seek to profit from their private information by trading (Ky1q (1985); Admati and Pfleiderer (1988); Grundy and McNichols (1999); Kim and Verrecchia (1991)

From this projection, daily firm specific variation of stock i is defined as:

$$\mathrm{Var}(\varepsilon_{i,d}) = \mathrm{Var}(r_{i,d}) - \frac{\mathrm{Cov}\ (r_{i,d}, r_{m,d})^2}{\mathrm{Var}\,(r_{m,d})} \quad (5)$$

Applying (2), yearly firm specific variation of stock i defined as;

$$\mathrm{Var}(\varepsilon_{i,t}) = D_i * \mathrm{Var}(\varepsilon_{i,d}) = D_i * [\mathrm{Var}(r_{id}) - \frac{\mathrm{Cov}\ (r_{i,d}, r_{m,d})^2}{\mathrm{Var}\,(r_{m,d})}] \quad (6)$$

Where D_i is the number of trading days in year t, $\mathrm{Var}(r_{i,d})$ is the daily variance of stock i's excess return, $\mathrm{Var}(r_{md})$ is the daily variance of stock market's excess returns and Cov (r_{id},r_{md}) is the daily covariance between excess returns of stock i and that stock market.

The equation to calculate the proxy of firm specific information is shown below:

$$\Psi_{it} \equiv \ln\left(\frac{1-R_{it}^2}{R_{it}^2}\right) = \ln\left(\frac{\mathrm{Var}\,(\varepsilon_{i,t})}{\mathrm{Var}\,(r_{i,t}) - \mathrm{Var}\,(\varepsilon_{i,t})}\right) \quad (7)$$

where subscript *i* and *t* represent firm and year, respectively. $\mathrm{Var}(\varepsilon_{i,t})$ is the firm specific variation. And $\mathrm{Var}(r_{i,t})$ is the total variance of the firm. Dependent variable Ψ_{it} is the proxy of firm specific information.

Table 3 presents descriptive statistic for firm specific variation (annualize) and Ψ_{it} over the entire sample period in firm level. For this table, I estimate firm specific variation for each sample year t, the mean of firm specific variation is about 0.237, firm specific information has mean about 4.026 and a median of 3.596 with the range from -0.267 to 14.424.

Table 3
Descriptive statistic of firm specific information

This table shows the sample characteristics of firm specific information for 142 firms over the period 2000-2007 with 1,136 observations.Ψ_{it} is the proxy of firm specific information calculated by taking the natural log to the firm specific variation relative to market wide variation. This table presents firm specific variation and firm specific information in firm level.

Variable	Mean	Median	Max	Min	Std.Dev
Firm specific Variation	0.237	0.146	4.515	0.001	0.292
Firm specific Information	4.026	3.596	14.424	-0.267	2.472

4.3 The probability of information-based Trading (PIN)

To be more completely test the information flow hypotheses, I also investigate alternative measurements of information flow that is the probability of information-based trading (PIN) based on Easley et al. (1998).Trading is theoretically linked to the quality or extent of private information and is thus a natural measure of private information flow. The analysis uses the information in trade data to estimate the probability of inform trade.

Private information is the event as the occurrence of signal that is not publicly observable about the future value of asset where the signal may be good news or bad news. Public information events may affect prices but not directly affect trade while the focus here is the private information event which is independently distributed across days and occur with probability **α**. These information events are good news with the probability 1-δ or bad news with probability **δ**. Trade arises from both informed traders (those who have seen any signal) and uninformed traders. On any day, arrivals of uninformed buyers and uninformed sellers are random variables determined by independent Poisson processes with arrival rate **ε** per day while the arrival rate of inform trader is **μ** per day. Assume that inform traders are risk neutral. If they observe good signals, they will buy the stock and they will sell the stock if they observe bad signals. In the model, buys and sell will reflect the underlying information structure, more buys in good events and more sells in bad events and no inform traders in no event day. These rate and probabilities are presented by this model which weights on three possible components (good news, bad news and no news, respectively) reflect their probability of occurrence in the data.

Estimate these parameters $\theta i = (\alpha_i, \delta_i, \varepsilon_{ik}, \mu_{i,})$ of firm *i* in each year by maximizing the joint likelihood over the *J* trading days in a calendar year. The two probability parameters α and δ were restricted to [0, 1] by a logit transform of unrestricted parameters, and the two rate parameters ε and μ were restricted to [0, ∞] by a logarithmic transform. The formula is shown below:

$$L_i[(B_{i,j}, S_{i,j})/\theta_i] = (-2 \times \varepsilon_i + M_{i,j} \log(X_i) + (B_{i,j} + S_{i,j}) \log(\mu_i + \varepsilon_i)) + \log \alpha_i (1 - \delta_i) e^{\mu_{i,}} X_{i,}^{(S_{i,j,} - M_{i,j})} + (\delta_i \alpha_i) e^{\mu_i} X_i^{(B_{i,j} - M_{i,j})} + (1 - \alpha_i) X_i^{(B_{i,j} + S_{i,j} - M_{i,j,})} \quad (8)$$

Define**:** $M_{i,j}$ = (min ($B_{i,j}$, $S_{i,j}$) + max ($B_{i,j}$, $S_{i,j}$)) / 2

X_i = ε_i / ($\mu_{i,}$ + ε_i)

Where ε_i is an arrival rate of uninformed traders for firm *i*, μ_i ,is an arrival rate of informed traders for firm *i*, B_i, is the number of investor buy order over day *j* , S_i, is the number of investor initiated sell order over day, δ_i is a probability of information bad event is occur, α_i is a probability of occurring private information event, θ_i is the vector of parameters to be estimated (α_i, δ_i, ε_{ik}, μ_i,) for firm *i*. A sequential trade model, presented in Easley et Al. (1998), uses counts of a firm's buy and sell trades to infer the flow of information.

That I mentioned earlier, Trade process depends on four parameters: α is the probability of private information events; δ, the probability that the information is bad news; μ, the arrival rate of inform trader; and ε, the arrival rate of uninformed traders. These parameters will determine the probability of information-based trading (PIN) in stock based on Easley et al. (1998) as the equation below;

$$\text{PIN} = \frac{\alpha\mu}{\alpha\mu+2\varepsilon} \qquad (9)$$

The PIN variable forms a theoretical construct that computes the weight of the private information based trading relative to the trading by uninformed traders. In equation (9), the numerator denotes the number of orders which is composed of the information based order arrival rate times the occurrence of the information event, and the denominator is the total sum of the information based trade and the sell and buy trades for the non information event case. In other words, the probability of information-based trading depends on the arrival rates of informed and uninformed traders and on the probability that new information exists.

Table 4, shows the sample characteristics of probability of information based-trade (PIN) which depends on the arrival rates of informed and uninformed traders and on the probability that new information based on Easley et. Al (1998). Consider the estimates the rate of informed trading, μ, has a mean equal 64.728 with the range from 0.000 to 516.199. ε, is the rate of uninformed trading has a mean of 30.467 with the range from 1.28E-08 to 485.655. The probability of private information events (α) and the probability of bad news (δ) and has a mean 0.260, 0.418, respectively with a range from 0 to 1. As can be seen, the overall mean probability of a trade being informed is 0.290, varying from a minimum of 0 to a maximum of 1.

Table 5 shows the descriptive statistic classified by Level of Corporate governance index providing the means and median of our estimates parameters for the high, medium and low corporate governance index. To test whether the individual

parameter estimates tend to be lower or higher. Firm Specific Information tends to lower for high corporate governance index and .And high corporate governance index tends to have more uninformed trade than weak corporate governance. The behavior of informed arrival rates shows the similar of uninformed trade. The probability of informed trade is clearly lower for the strong corporate governance.

Table 4
Descriptive statistic of probability of information based-trading (PIN)

This table shows the sample characteristics of the probability of information based-trade (PIN); Easley et. Al (1998) which depends on the arrival rates of informed and uninformed traders and on the probability that new information exists for firms over the period 2000-2007. These include μ is the rate of informed trading, ε is the rate of uninformed trading, α is the probability of private information events, δ is the probability of bad news.

Variable	Mean	Median	Max	Min	Std.Dev
μ	64.728	33.696	516.199	0.000	75.227
ε	30.467	6.957	485.655	1.29E-08	53.878
α	0.260	0.183	1.000	0.000	0.264
δ	0.418	0.410	1.000	0.000	0.247
PIN	0.290	0.281	1.000	0.000	0.138

Table 5: Descriptive statistics classified by level of corporate governance index

This table shows the descriptive statistic classified by Level of Corporate governance index providing the means and median of our estimates parameters for the high, medium and low corporate governance index. To test whether the individual parameter estimates tend to be lower or higher. There are the level of CGI includes sub-indices of corporate governance, Control variables, Firm Specific Information and also component of Probability of Information Based Trading (PIN).

	High CGI		Medium CGI		Low CGI	
	Mean	Median	Mean	Median	Mean	Median
Panel A: Corporate Governance Index and its Sub-indices						
CGI	0.607	0.593	0.455	0.452	0.312	0.317
Board Structure	0.558	0.500	0.386	0.333	0.319	0.333
Conflict of Interest	0.512	0.500	0.382	0.355	0.321	0.333
Board Responsibility	0.703	0.704	0.522	0.533	0.302	0.300
Shareholder rights	0.537	0.566	0.427	0.428	0.218	0.142
Disclosure and Transparency	0.694	0.700	0.540	0.500	0.344	0.300
Panel B: Control Variables						
Return to Equity	0.120	0.107	0.100	0.099	0.082	0.093
Leverage	0.102	0.038	0.085	0.018	0.110	0.021
Market to book value	1.513	1.100	1.238	0.910	0.962	0.71
Market Capitalization	21.528	21.400	20.780	20.620	20.407	20.328
Dividend Dummy	0.841	1.000	0.728	1.000	0.608	1.000
Firm Age	3.284	3.281	3.294	3.287	3.254	3.277
Panel C: Firm Specific Information						
Firm Specific Variation	0.154	0.094	0.235	0.153	0.320	0.21
Firm Specific Information	3.585	2.967	4.051	3.731	4.44	4.147
Panel D: Components of PIN						
PIN	0.264	0.262	0.294	0.281	0.312	0.301
μ	77.957	51.068	61.662	25.091	54.537	20.462
ε	39.860	11.931	21.959	3.861	29.574	6.698
α	0.274	0.214	0.266	0.175	0.241	0.167
δ	0.452	0.459	0.388	0.375	0.413	0.384

4.4 Firm-specific information and Corporate Governance

To test hypothesis, I followed the approach of Ferreira and Laux (2007), I examine the relationship between information flow and corporate governance characteristics in 2000-2007 by using a logistic relative firm-specific return variation as a proxy for firm specific information. I first conduct multivariate regression tests with Firm specific information as dependent variable and corporate governance indices as key independent variable. To test hypotheses about the relationship between information flow and corporate governance, time-series cross-sectional firm level model can be specified as

$$\Psi_{it} = \beta_0 + \beta_1 ROE_{i,t} + \beta_2 LEV_{i,t} + \beta_3 M/B_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 DD_{i,t} + \beta_6 AGE_{i,t} + \beta_7 CGI_{i,t} + \varepsilon_{it} \quad (10)$$

where subscript *i* and *t* represent firm and year, respectively. Ψ_{it} is the proxy of firm specific information calculated by taking the natural log to the firm specific variation relative to market wide variation. CGI is proxy of governance index. The remaining variables in this study are motivated by Ferreira and Laux (2007), the regressors include profitability (ROE), leverage (LEV), market-to-book ratio (M/B), equity capitalization (SIZE), dividend-payer dummy (DD) and firm age (AGE).

I also investigate the relationship between sub index of corporate governance index that divided into five corporate governance components and firm specific information.

$$\Psi_{it} = \alpha_0 + \alpha_1 ROE_{i,t} + \alpha_2 LEV_{i,t} + \alpha_3 M/B_{i,t} + \alpha_4 SIZE_{i,t} + \alpha_5 DD_{i,t} + \alpha_6 AGE_{i,t} + \alpha_7 BRDSTRUCT_{i,t} + \alpha_8 CONFLICT_{i,t} + \alpha_9 BRDRES_{i.t} + \alpha_{10} SHRIGHT_{i.t} + \alpha_{11} DISCLOSE_{i.t} + \varepsilon_{it} \quad (11)$$

where the additional factors represent Board structure (*BRDSTRUCT*), Conflict of Interest (*CONFLICT*), Board responsibilities (*BRDRES*)Shareholder rights (*SHRRIGHT*), and Disclosure and transparency (*DISCLOSE*) that are the sub-categories of Corporate Governance index.

4.5 The probability of information-based Trading (PIN) and Corporate Governance

To be more completely test the information flow hypotheses, I also investigate the relationship between alternative measurement of information flow that is the probability of information-based Trading (PIN) and Corporate Governance. PIN captures the arrival rate of informed and uninformed traders and on the probability that new information exists. I conduct multivariate regression tests with PIN as dependent variable and corporate governance indices as key independent variable. Estimates of coefficients of the time-series cross-sectional firm-level regression as:

$$PIN_{it} = b_0 + b_1 ROE_{i,t} + b_2 LEV_{i,t} + b_3 M/B_{i,t} + b_4 SIZE_{i,t} + b_5 DD_{i,t} + b_6 AGE_{i,t} + b_7 CGI_{i,t} + \varepsilon_{i,t} \quad (12)$$

where subscript i and t represent firm, year, respectively. Dependent variable is PIN stands for probability of information-based trading. The regressors include CGI as a proxy of governance index, profitability (ROE), leverage (LEV), market-to-book ratio (M/B), equity capitalization (SIZE), dividend-payer dummy (DD) and firm age (AGE).

I also investigate the relationship between sub index of corporate governance index that divided into five corporate governance components and alternative measurement of information flow that is probability of information-based trading (PIN) as following.

$$PIN_{it} = c_0 + c_1 ROE_{i,t} + c_2 LEV_{i,t} + c_3 M/B_{i,t} + c_4 SIZE_{i,t} + c_5 DD_{i,t} + c_6 AGE_{i,t} + c_7 BRDSTRUCT_{i,t} + c_8 CONFLICT_{i,t} + c_9 BRDRES_{i.t} + c_{10} SHRIGHT_{i,t} + c_{11} DISCLOSE_{i,t} + \varepsilon_{it} \quad (13)$$

where the additional factors represent Board structure (*BRDSTRUCT*), Conflict of Interest (*CONFLICT*), Board responsibilities (*BRDRES*), Shareholder rights (*SHRRIGHT*), and Disclosure and transparency (*DISCLOSE*) that are the sub-categories of CGI.

Chapter V

Empirical Result

In this section, I will present result of regression analysis in the estimation the relationship between information flow and corporate governance. Estimation of private information flow will use in 2 methods. 1) Firm specific information (Ψ) 2) The probability of information based- trading (PIN). And estimate corporate governance by using corporate governance index as a proxy.

Firm specific information and Corporate Governance

Table 6 shows the results that emphasize on finding the effect of each component to firm specific information. This table presents estimates of the time-series cross-sectional firm-level regression with the continuous data over the period 2000-2007, The regression reports the result from equation 10 and equation 11 in which firm specific information Ψ is the dependent variable and corporate governance indices as key independent variable, as well as sub-indices of corporate governance and full version with the complete set of control variables.

The entire estimates coefficients are in line with the hypothesis signs. The result supports that Market to book ratio (M/B), dividend-payer dummy (DD), firm age (AGE) has positive relationship with firm specific information while leverage (LEV), market capitalization (SIZE) show negative effect. In collumn1, all variables are significant at 1% level while Return to equity is not significant in any level. The positive relationship of dividend dummy and firm age are consistent with the view that growth firm, firm pays dividend and longer establishment will have more events ,more news that make that information frequently reflect price changes. On the other hand, firm with high leverage and large firm give negative effect on firm specific return variation. Larger firms are more covered by the media and draw wider attention by financial analysts, mostly are public information. The sign of the coefficient is consistent within a Ferreira and Laux (2007) paper. And the reasons also support by the study of Wei and Zhang (2006) and Xu and Malkiel (2003) state that the larger firms tend to have smaller firm specific volatility. Following, Chang and Dong (2006) take into account for leverage effect observe negative relation.

In column 1, Controlling for firm characteristics, the result provide the evidence that corporate governance index has strong statistically significant at 1%

level negative relation with the firm specific information. In column1, the regression coefficient on CGI index is -2.076 with a standard error about 0.526, a one point increase in the CGI index of the average firm will reduce private information Ψ by 2.076. In other words, higher level of CGI indicates better corporate governance influence lower level of idiosyncratic volatility[3], lower private information. In column 2 to 6 are uses each sub-indices of corporate governance instead of CGI. The result shows that all sub-indices are strong significant in 1% level negatively with firm specific information except shareholder rights are not significant at any level. Moreover, in column7 investigates relationship between 5 sub-indices of corporate governance and firm specific information. The results provide that board structure and conflict of interest have statistically significant at 5% level. Board Structure and Conflict of Interest show negative relation with the firm specific information while the rest of sub-indices are not statistically significant. In column7, the regression coefficient on board structure and conflict of interest are -0.829, -1.324, respectively with standard errors about 0.360, 0.549, respectively. A one point increase in board structure and conflict of interest indices of average firm will decrease private information flow Ψ by 0.829, 1.324, respectively. Consequently, Board structure and conflict of interest are the indices that influence private information flow with negatively related while the rest of sub-indices are not influence private information.

[3] Idiosyncratic volatility is a good candidate for a summary measure of information flow, especially for private information flow.

Table 6
Panel Regressions: firm specific information on corporate governance index (CGI), sub-indices of corporate governance, and other firm characteristics.

This table reports estimates of coefficient of yearly time-series cross-sectional firm-level regression. The sample period is from 2000-2007. Dependent variable defines as Ψ_{it} that is the proxy of firm specific information calculated by taking the natural log to the firm specific variation relative to market wide variation. The remaining variables in this study are motivated by Ferreira and Laux (2007), the regressors include profitability (ROE), leverage (LEV), market-to-book ratio (M/B), equity capitalization (SIZE), dividend-payer dummy (DD) and firm age (AGE). CGI is proxy of governance index, constructed from the data collected through the questionnaire. Board structure (*BRDSTRUCT*), Conflict of Interest (*CONFLICT*), Board responsibilities (*BDRES*), Shareholder rights (*SHRRIGHT*), and Disclosure and transparency (*DISCLOSE*) that are the sub-categories of CGI.

Independent Variable	1	2	3	4	5	6	7
C	**14.491*** **	**15.053*** **	**14.428*** **	**14.596*** **	**14.527*** **	**14.621*** **	**15.014*** **
	(1.178)	(1.182)	(1.179)	(1.181)	(1.206)	(1.183)	(1.212)
ROE	**0.267**	**0.338**	**0.292**	**0.286**	**0.329**	**0.325**	**0.291**
	(0.409)	(0.409)	(0.409)	(0.410)	(0.412)	(0.410)	(0.408)
LEV	**-2.299*** **	**-2.327*** **	**-2.187*** **	**-2.395*** **	**-2.344*** **	**-2.325*** **	**-2.257*** **
	(0.461)	(0.462)	(0.463)	(0.463)	(0.464)	(0.463)	(0.464)
MTBV	**0.111***	**0.106***	**0.092**	**0.114***	**0.101***	**0.107***	**0.107***
	(0.061)	(0.061)	(0.061)	(0.061)	(0.061)	(0.061)	(0.061)
MKCAP	**-0.630*** **	**-0.670*** **	**-0.636*** **	**-0.662*** **	**-0.668*** **	**-0.655*** **	**-0.647*** **
	(0.055)	(0.054)	(0.055)	(0.054)	(0.056)	(0.055)	(0.056)
DD	**0.858*** **	**0.807*** **	**0.831*** **	**0.840*** **	**0.799*** **	**0.808*** **	**0.849*** **
	(0.177)	(0.176)	(0.176)	(0.178)	(0.178)	(0.177)	(0.177)
AGE	**0.947*** **	**0.896*** **	**0.956*** **	**0.968*** **	**0.940*** **	**0.915*** **	**0.926*** **
	(0.163)	(0.163)	(0.163)	(0.164)	(0.165)	(0.164)	(0.165)
CGI	**-2.076*** **						
	(0.526)						
BRDSTRUCT		**-1.156*** **					**-0.829** **
		(0.338)					(0.360)
CONFLICT			**-1.891*** **				**-1.324** **
			(0.493)				(0.549)
BRDRES				**-0.890*** **			**-0.614**
				(0.321)			(0.433)
SHRRIGHT					**-0.314**		**0.580**
					(0.355)		(0.439)
DISCLOSE						**-0.805** **	**-0.151**
						(0.365)	(0.468)
R^2	0.227	0.225	0.227	0.222	0.217	0.220	0.233
N	1136	1136	1136	1136	1136	1136	1136

Note: Coefficients are presented in boldface. Standard errors are in parentheses. *, ** and*** indicate significance at 10%, 5%, 1% level, respectively.

The probability of information-based Trading (PIN) and Corporate Governance

To substantiate the informational interpretation of the firm specific information and governance, next test for the relation between private information (in particular, PIN) and corporate governance index. In table 7 presents estimates of the time-series cross-sectional firm-level regression over the period 2000-2007.In Column 1, the regression reports the result from equation 12 and equation 13 in which the probability of information-based Trading; PIN_{it} is the dependent variable and corporate governance indices as key independent variable, as well as sub-indices of corporate governance and full version with the complete set of control variables.

In column 1, the result supports that dividend-payer dummy (DD) has positive relationship with PIN while market capitalization (SIZE) show negative effect with statistically significant at 1% level and the rest of control variables are not significant at any level. The coefficient on corporate governance index has strong statistically significant at 1% level negative relation with probability of information-based trading (PIN) which give the same result of the firm specific information and governance relationship. The regression coefficient of CGI is -0.134 with standard error about 0.033, a one point increase in the CGI index of the average firm will decrease probability of information-based trading (PIN) by 0.134. In other words, higher level of CGI provides a decrease in private information. In column 2 to 6 are uses each sub-indices of corporate governance instead of CGI. The result shows that all sub-indices are strong significant in 1% level with PIN. In addition, I also investigate relationship between 5 sub-indices of corporate governance and PIN in column 7.The results of control variables are similar to the former regression with the same sign and same statistically significant level at 1% level. After control firm characteristics, the results show that PIN has strong negative relation with board structure and board responsibility indices with statistically significant at 5% level while the rest of sub-indices are not significance at any level. The coefficient on board structure and board responsibility are -0.051, -0.066, respectively with standard error about 0.022, 0.027, respectively. A one point increase in board structure and board responsibility will decrease PIN by 0.051, 0.066, respectively. Therefore, Board structure and board responsibility are the indices that influence private information with negatively related while the rest of sub-indices are not influence private information.

Table 7: Panel Regressions: The probability of information-based trading (PIN) on corporate governance index (CGI), sub-indices of corporate governance, and other firm characteristics.

This table reports estimates of coefficient of yearly time-series cross-sectional firm-level regression. The sample period is from 2000-2007. Dependent variable defines as PIN, the annual probability of information-based trading of Easley et al. (1998). The remaining variables in this study are motivated by Ferreira and Laux (2007), the regressors include profitability (ROE), leverage (LEV), market-to-book ratio (M/B), equity capitalization (SIZE), dividend-payer dummy (DD) and firm age (AGE). CGI is proxy of governance index, constructed from the data collected through the questionnaire. Board structure (*BRDSTRUCT*), Conflict of Interest (*CONFLICT*), Board responsibilities (*BRDRES*), Shareholder rights (*SHRRIGHT*), and Disclosure and transparency (*DISCLOSE*) that are the sub-categories of CGI.

Independent Variable	1	2	3	4	5	6	7
C	**0.585*** **	**0.619*** **	**0.590*** **	**0.589*** **	**0.565*** **	**0.593*** **	**0.603*** **
	(0.073)	(0.073)	(0.074)	(0.073)	(0.075)	(0.073)	(7.990)
ROE	**0.011**	**0.015**	**0.014**	**0.011**	**0.012**	**0.014**	**0.011**
	(0.025)	(0.025)	(0.026)	(0.025)	(0.026)	(0.025)	(0.414)
LEV	**0.022**	**0.020**	**0.024**	**0.014**	**0.019**	**0.020**	**0.016**
	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.566)
MTBV	**0.000**	**0.000**	**-0.001**	**0.001**	**0.000**	**0.000**	**0.001**
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.172)
MKCAP	**-0.015*** **	**-0.017*** **	**-0.016*** **	**-0.016*** **	**-0.016*** **	**-0.016*** **	**-0.016*** **
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(-4.509)
DD	**0.044*** **	**0.040*** **	**0.041*** **	**0.044*** **	**0.042*** **	**0.041*** **	**0.044*** **
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(4.023)
AGE	**0.011**	**0.008**	**0.011**	**0.013**	**0.012**	**0.009**	**0.012**
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(1.142)
CGI	**-0.134*** **						
	(0.033)						
BRDSTRUCT		**-0.068*** **					**-0.051** **
		(0.021)					(-2.264)
CONFLICT			**-0.064** **				**-0.006**
			(0.031)				(-0.187)
BRDRES				**-0.077*** **			**-0.066** **
				(0.020)			(-2.454)
SHRRIGHT					**-0.054** **		**-0.002**
					(0.022)		(-0.087)
DISCLOSE						**-0.054** **	**0.005**
						(0.023)	(0.182)
R^2	0.049	0.044	0.039	0.048	0.040	0.040	0.053
N	1136	1136	1136	1136	1136	1136	1136

Note: Coefficients are presented in boldface. Standard errors are in parentheses. *, ** and*** indicate significance at 10%, 5%, 1% level, respectively.

Chapter VI

Conclusion

This study intends to find the relationship between information flow and corporate governance evidence in Thailand because the effect of corporate governance on equity price and distribution of return is the important and interesting issue in corporate finance. Governance can directly influence equity price by the flow of the information. According to, prior study of Ferreira and Laux (2007) uses anti-takeover index to examine the effect of anti-takeover provision on an information flow that cannot be generalized to Thai market. Therefore, in this paper I seek to investigate the relationship between information flow and corporate governance by using Thai company listed in Stock Exchange of Thailand (SET) over the period 2000-2007 with 142 firms as a sample by extending the corporate governance index into five components: 1) Board Structure 2) Conflict of Interest 3) Board Responsibilities 4) Shareholder Rights, and 5) Disclosure and Transparency. Corporate Governance Index (CGI) acts as the proxy of corporate governance and the measurement of private information flow will use firm-specific return variation. There are also many evidence supports in this literature review that use firm-specific return variation as a measure of private information and use probability of information based trade (PIN) as the alternative measurements of information flow.

In my baseline model, I test the linear regression of corporate governance index, appropriately instrumented, on information flow with other control variables that are followed by the study of Ferreira and Laux (2007). According to Roll state that high firm specific return variation is not associated with the public information such as unemployment statistics or quarterly earnings. He argues that “the financial press misses a great deal of relevant information generated privately” (p. 564) and concludes that this firm-specific returns variation reflects the capitalization of private information into share prices as a result of informed trading by risk arbitrageurs. The results of the regression indicate that corporate governance is negatively related with private information flow. The interpretation of this result is that Strong corporate governance results in less idiosyncratic risk that measure the rate of private information incorporate into price via trading. In other words, strong corporate governance will have less private information trading relative to the public information. It will reduce the information asymmetry between management and traders, leading to less

heterogeneity among trader beliefs and smaller speculative positions among informed trader. Due to weak property rights in Thailand may discourage production of arbitrages on firm specific information, consequently the information that security analyst collect may from macro content than firm specific detail.

After using probability of information based trade (PIN) as other measure of information flow, the result is consistent with the firm specific information (Ψ). Investors may be trading on the basis of information, high corporate governance attract even more uninformed following to the stock and that deeply reduces the overall risk of information-based trading. The results thus confirm the view that good corporate governance is generally based on public, rather than private information. This result also support in the paper of Easley et al. state that PIN is a measure of the frequency of informed relative to uninformed trades. Hence, the unexpectedly low PIN estimate may simply reflect the fact that informed trading is swamped by the very high level of uninformed trades. In addition, strong corporate governance on board structure will allow directors are able to make decisions independently for the best interest of companies and shareholders. When firm-specific knowledge is important, a board that is too independent may fail to obtain crucial information. Perhaps there are few informed insiders (Raheja (2005)), or perhaps the CEO refuses to communicate with the board (Adams and Ferreira (2007)) that makes lower of private information of firm.

There are the different results in this study compared with the study of Ferreira and Laux (2007) due to the difference in governance system across economy: The study of Ferreira and Laux (2007) uses anti-takeover index to capture corporate governance while this study uses broaden corporate governance index into five sub-indices which capture all major aspects of corporate governance. On the other hand, the results in this paper also support with the study of Kee H. Chung, John Elder, and Jang-Chul Kim(2009) that based on the broader interpretation of corporate governance provide by Institutional Shareholder Service(ISS) that consist of 24 such governance attributions. The results conclude that the better corporate governance will alleviate information-based trading, reduce informational asymmetries and lead to smaller speculative positions among informed traders.

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APPENDIX

Appendix

Questions for corporate governance index construction

Code	Questions	Scoring Rule		Max. Score	Weight
A. Board Structure				**6.00**	**20%**
A1	What is the size of the board of directors?	1 if 5 <=a1<=12;	;0 otherwise	1.00	
A2	What is the size of executive board?	1 if a2 <= 12	;0 otherwise	1.00	
A3	How many directors are also managers?	1 if a3/a1 < 1/3	;0 otherwise	1.00	
A4	How many directors are dependent?	1 if a4/a1 > 1/3	;0 otherwise	1.00	
A5	Does the firm state the definition of independence in the disclosure report?	1 if a5=1	;0 otherwise	1.00	
A6	How many directors have attended director training programs by the Thai Institution of Directors Association?	1 if a6/a1 >1/2	;0 otherwise	1.00	
B. Conflict of Interest				**8.00**	**25%**
B1	Is the chairman is the same person as CEO?	1 if b1=1	;0 otherwise		
B2	Is the chairman independent?	1 if b2=1	;0 otherwise		
B3	How many public companies dose the chairman currently serve as a director or a manager?	1 if b3<=3	;0 otherwise		
B4	Does an audit committee exist?	1/2 if b4=1	;0 otherwise		
B5	- Chair by independent director?	1/6 if b5=1	;0 otherwise		
B6	- Role and responsibilities clearly stated?	1/6 if b6=1	;0 otherwise		
B7	- Performance or meeting attendance disclosure?	1/6 if b7=1	;0 otherwise		
B8	Does a nominating committee exist?	1/2 if b8=1	;0 otherwise		
B9	- Chair by independent director?	1/6 if b9=1	;0 otherwise		
B10	- Role and responsibilities clearly stated?	1/6 if b10=1	;0 otherwise		
B11	- Performance or meeting attendance disclosure?	1/6 if b11=1	;0 otherwise		
B12	Does a remuneration committee exist?	1/2 if b12=1	;0 otherwise		
B13	- Chair by independent director?	1/6 if b13=1	;0 otherwise		
B14	- Role and responsibilities clearly stated?	1/6 if b14=1	;0 otherwise		
B15	- Performance or meeting attendance disclosure?	1/6 if b15=1	;0 otherwise		
B16	Does a corporate governance committee exist?	1/2 if b16=1	;0 otherwise		

B17	- Chair by independent director?	1/6 if b17=1	;0 otherwise		
B18	- Role and responsibilities clearly stated?	1/6 if b18=1	;0 otherwise		
B19	- Performance or meeting attendance disclosure?	1/6 if b19=1	;0 otherwise		
Code	**Questions**	**Scoring Rule**		**Max. Score**	**Weight**
B. Conflict of Interest				**8.00**	**25%**
B20	Does the firm has a policy that specifies a minimum number of independent directors?	1/3 if b20=1	;0 otherwise		
	Does the firm discuss the following internal-control issues in the disclosure report?				
B21	- Organization and control environment	2/15 if b21=1	;0 otherwise		
B22	- Risk management	2/15 if b22=1	;0 otherwise		
B23	- Management control activities	2/15 if b23=1	;0 otherwise		
B24	- Information and communication	2/15 if b24=1	;0 otherwise		
B25	- Monitoring and evaluation	2/15 if b25=1	;0 otherwise		
C. Board Responsibilities				**13.00**	**20%**
C1	Number of board meeting per year	1 if c1>4	;0 otherwise	1.00	
C2	Average director's meeting attendance	c2/c1	;0 otherwise	1.00	
C3	Average independent directors meeting attendance	c3/c1	;0 otherwise	1.00	
C4	Is there a board meeting solely for independent directors?	1 if c4=1	;0 otherwise	1.00	
C5	Number of audit committee meeting per year	1 if c5=>4	;0 otherwise	1.00	
C6	Average audit committee meeting attendance	c6/c5	;0 otherwise	1.00	
C7	Is there at least one accounting expert on the audit committee?	1 if c7=1	;0 otherwise	1.00	
C8	How many public companies does the chairman of audit committee serve as a director or manager?	1 if c8<=3	;0 otherwise	1.00	
C9	Does the firm clearly distinguish the role and responsibilities of the board and management?	1/3 if c9=1	;0 otherwise	0.33	
C10	Does the firm disclose that directors evaluation system exists?	1/3 if c10=1	;0 otherwise	0.33	
C11	Does the firm have an option scheme which incentivizes management?	1/3 if c11=1	;0 otherwise	0.33	
C12	Has there been any legal dispute where the firm was claimed to be a fault during the past year?	1 if c12=0	;0 otherwise	1.00	
C13	Has there been any sanction to the board, management, or other insider for violations of Securities and/or Corporations laws in the last two years?	3*(1-c13)	;0 otherwise	3.00	

D. Shareholder Rights				**7.00**	**10%**
D1	Does the firm hold an annual general shareholder meeting?	1 if d1=1	;0 otherwise		
D2	Does the firm employ one-share-one-vote rule?	1 if d2=1	;0 otherwise		
D3	Is cumulative voting allowed in electing directors?	1 if d3=1	;0 otherwise		
Code	**Questions**	**Scoring Rule**		**Max. Score**	**Weight**
D. Shareholder Rights				**7.00**	**10%**
D4	Is voting by mail allow?	1 if d4=1	;0 otherwise		
D5	How many days in advance does the company send out a notice of general meetings to shareholders?	d5/14	;0 otherwise		
D6	Is proxy voting allowed?	1 if d6=1	;0 otherwise		
D7	Does the firm disclosure a dividend policy?	1/3 if d7=1	;0 otherwise		
D8	What is the minimum dividend (as a percentage of net profit) according to the dividend policy?	1/3*d8/100	;0 otherwise		
D9	Does the firm provide an explanation/rationale for setting dividend at the specified level?	1/3 if d9=1	;0 otherwise		
E. Disclosure and Transparency				**13.00**	**25%**
	Does the firm disclose the following information in the disclosure report?				
E1	- Board meeting attendance of individual directors	1 if e1=1	;0 otherwise	1.00	
E2	- Board compensation and/or benefits of individual directors	1 if e2=1	;0 otherwise	1.00	
E3	- Directors shareholding	1 if e3=1	;0 otherwise	1.00	
E4	- Management shareholding	1 if e4=1	;0 otherwise	1.00	
E5	- Related party transaction in detail	1 if e5=1	;0 otherwise	1.00	
E6	- Corporate group structure	1 if e6=1	;0 otherwise	1.00	
E7	- Grouping of major shareholding who belong to the same family/economics unit	1 if e7=1	;0 otherwise	1.00	
E8	Does investor relation unit exist?	1 if e8=1	;0 otherwise	1.00	
E9	Does the firm mention its investor relations activity carried out during the past year?	1 if e9=1	;0 otherwise	1.00	
E10	Does the firm's Annual Report include a section devoted to corporate governance principles and implementations?	1 if e10=1	;0 otherwise	1.00	
E11	How many times in the last two years has the firm been charged for failures to publish company reports within the specified periods?	3-e23	;0 otherwise	3.00	

Biography

Miss Gunyarat Supawimon was born on September 30, 1985, in Bangkok. At the Secondary School, she graduated form Saint Joseph Convent School. At the undergraduate level, she graduated from the faculty of Economics, Chulalongkorn University in May 2008 with a Bachelor of art in Economics degree. After that, she joined the Master of Science in Finance Program, Chulalongkorn University in June 2008.