# “The effect of information disclosure on information asymmetry”


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# The effect of information disclosure on information asymmetry

## Abstract

This study investigates the relation among information disclosure, firm characteristics and information asymmetry. The authors find evidence consistent with the notion that increasing corporate disclosure and transparency reduces the asymmetric information between informed and uninformed investors. The findings indicate a strong relation between firm characteristics and level of information disclosure. Larger firms, firms with high growth opportunity and superior performance are associated with higher level of information disclosure. With respect to type of information, large firms, firms with superior operating performance, high growth opportunity are likely to disclose the investment and structural change as well as legal and miscellaneous information. Furthermore, the empirical findings indicate that listed companies with high corporate transparency and disclosure have low relative bid-ask spreads and high share turnover. Conclusively, the evidence supports the notion that increasing corporate disclosure and transparency reduce the asymmetric information between informed and uninformed traders.

**Keywords:** information disclosure, firm characteristics, disclosure policy.
**JEL Classification:** G11, G14, G24.

## Introduction

In the past twenty years, there has been increased attention and focus on the importance of information disclosure. In the model of capital market equilibrium with incomplete information, Merton (1987) demonstrates the extent to which corporate disclosure affects firm value. Unlike traditional capital asset pricing model (CAPM), incomplete information environment leads to market segmentation and prevent investors from obtaining the complete information necessary for portfolio diversification. Consequently, investors perceive securities with low information disclosure as riskier securities and demand higher rate of return from their investments (Klein and Bawa, 1977; Bawa, Brown and Klein, 1979; and Barry and Brown, 1984, 1985 and 1986).

On the other hand, information disclosure can drastically increase firm value. Healy and Palepu (2001), Leftwich (1980), Watts and Zimmerman (1986), and Beaver (1998) argue that minimum disclosure requirements could diminish information gap between informed and uninformed investors since corporate disclosure provides new and relevant information to outside investors. Bhardwaj and Brooks (1992), Leuz and Verrecchia (2000) and Cheng, Courtenay and Krishnamurti (2005) show that high degree of information disclosure reduce information asymmetry between outside investors and managers which results in lower monitoring cost. Similarly, Diamond and Verrecchia (1991), Kim and Verrecchia (1994), Botosan (1997), Piotroski (1999) and Botosan and Plumlee (2002) show theoretically or empirically that the high information disclosure firm is associated with lower cost of capital.

This study investigates the relationship between information disclosure and firm characteristics. Our findings indicate a strong relation between firm characteristics and level of information disclosure. Larger firms, firms with high growth opportunity and superior operating performance are associated with higher level of information disclosure. With respect to type of information, large firms, firms with high market-to-book ratios and high revenue growth are likely to disclose the investment and structural change as well as legal and miscellaneous information. Firms having low ownership concentration frequently release investment and structural change information. Firms with high leverage tend to regularly disclose financial information. Furthermore, this study analyzes whether firm' policies of increasing the corporate disclosure and transparency can reduce information asymmetry among insiders and outside investors. The empirical results demonstrate that listed companies in Thailand with high corporate transparency and disclosure, particularly in investment and structural change as well as legal and miscellaneous information have low relative bid-ask spreads and high share turnover. Endogeneity is addressed through the use of 2-Stage Least Squares estimation. Conclusively, the evidence supports the notion that increasing corporate disclosure and transparency can reduce the asymmetric information between informed and uninformed traders.

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The remainder of this study is organized as follows. Section 1 describes information disclosure procedure and dissemination policy on Stock Exchange of Thailand. Sections 2 and 3 describe data descriptions and methodology, respectively. Section 4 reports the empirical results and discussion of findings. The final section concludes the paper.

## 1. Information disclosure procedure and dissemination policy

The Stock Exchange of Thailand (SET) maintains a policy requiring companies to disclose market moving information. Listed securities are mandatory to disclose adequate information of material incidents or development in their business activities to the public. According to the Security and Exchange Act A.D. (1992), the obligation of corporate information disclosure is contained in Division 5 with the section 56 and 57. These requirements display the mechanism of capital market to govern the listed company performance and to preserve impartiality of market participants and exchange. Thus, listed company has a mandatory condition to disclose the necessary information to the general public. The Stock Exchange of Thailand recognizes that the significant of corporate disclosure should be correct, sufficient and timely. SET, hence, has initiated the appropriate guidelines on disclosure of listed companies to ensure that all investors can equally and timely access to corporate information. A listed company is required to disclose the significant information relating to the business affairs and its subsidiaries under market conditions. SET defined the important information disclosure as follows:

- Where the information is likely to have a significant effect on trading of any of the company's securities.
- Where such information is likely to be considered important by an investor, who applies analysis of information by analysts or experts in determining his choices of action.
- Where such information is likely to have the effect on the investors or shareholders.

Listed companies are required to disclose the material information concerning its business through SET. The listed company must disclose any information either before or after the end of a trading session. Disclosing during a trading session, the listing department post a trading halt on securities or await the disclosure until the appropriate time. Figure 1 exhibits the dissemination procedure of essential information.

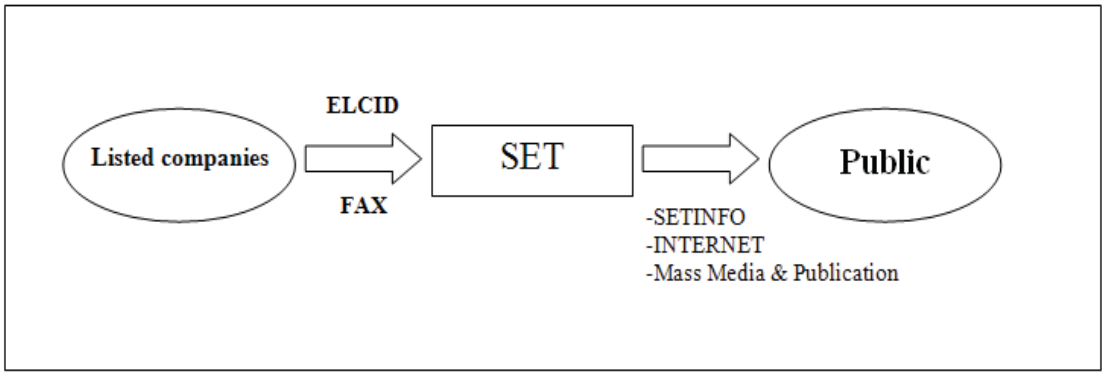


**Fig. 1. Dissemination and procedure of information disclosure**

To ensure equal access, any listed companies must disclose the material information at least one hour prior to the commencement of each trading session or after the close of the day's trading. Therefore, investors have enough time to analyze the information in order to make investment decisions (Figure 2). The Stock Exchange of Thailand has two daily trading sessions. The morning trading session is from 10:00 a.m. to 12:30 p.m. and the afternoon trading session is from 2:30 p.m. to 5:00 p.m. However, if it's deemed that the listed companies disclose information during the trading session, SET may order a temporary prohibition trading of its securities by posting the Trading Halts (H) or Suspension (SP) sign on its securities.

## 2. Data description

The data used in this study was obtained from the Stock Exchange of Thailand (SET)'s database. The database provides historical and real-time information of listed firms through SETINFO. We use time-stamped news announcements file, daily trading information of listed firms, and firm-specific characteristics at the fiscal year end. We measure daily news announcement by frequency of news, and classify the news into category by the headline of news announcement.

Table 1 presents sample selection process of news announcements. There are total of 84,204 news announcements during the period of 1999-2007.

While listed firms in Thailand are traded on two main exchanges, SET and MAI (Market for Alternative Investment), our study focuses on the largest exchange (SET). We only include common stocks in our analyses and exclude unit trust securities because of a lack of liquidity for these securities. Lastly, we exclude duplicated new announcements for the same company with the same news content and released dates. Our final sample consists of 68,722 news announcements from 300 non-financial firms.

Table 1. Summary of sample selection of news announcements

| | |
|---|---|
| Total news announcements | 84,204 |
| *Less:* | |
| Listed security on Market for Alternative Investment | 615 |
| Unit trust security | 14,867 |
| Duplicated news announcements | 12,155 |
| Final sample news announcements | 68,722 |

Notes: This table presents the summary statistics of news announcement of listed companies on the SET. The three types of news disclosure categories are identified by the SET Regulation & Notification and Securities and Exchange Act B.E. (1992). The first category of news announcement is Corporate Investment and Structural Change announcement (*INV_STRUC*). The second and third of news type are Financial Information announcement (*FIN_INFO*) and Legal and Miscellaneous announcement (*LEG_MIS*), respectively.

## 3. Methodology

**3.1. News announcement classification.** We classify news announcements into three groups based on the SET's disclosure regulation: Corporate Investment and Structural Change: (*INV_STRUC*), Financial Information (*FIN_INFO*) and Legal and Miscellaneous (*LEG_MIS*).

Corporate Investment and Structural Change (*INV_STRUC*):

- Change in asset. The purchase or sale of asset, change in investment plan, project, product or capital expenditure, acquisition or loss a contact.
- Change in equity or ownership. The purchase or sale of securities, change in management control (i.e. joint venture, merger, acquisition, consolidation and tender offer), change in capital, equity or ownership of firm.
- Increased/decreased capital. The issuance of an amount of news shares for sale to public or any persons or the cancellation or maturity of securities of listed company in whole or in part.
- Debt financing. Taking a loan or issuing debt instruments in an amount significant to its financial position & performance.
- Restructuring. Announce the financing or restructuring plans, business rehabilitation, reorganization or reconstruction.
- Repurchase. Buying back the shares of the listed companies or disposing of the shares that have been bought back.
- Stock split. A change in a share's per value.
- Stock option. The issuance of right in financial instruments to the public such as warrants, employee stock option (ESOP), convertible bond/equity, right offering.

Financial Information (*FIN_INFO*):

- Earnings. The actual disclosure of financial statement, annual report and the performance report of listed companies via the earnings forecasted by listed companies or analysts.
- Dividend. The declaration or omission of dividend.

Legal and Miscellaneous (*LEG_MIS*):

- Regulatory or legal decisions. Posting or lifting the trading sign which is issued by SET to warn investors when listed companies fail to follow the rule and obligation of SET i.e. the firm delay or do not send the financial statement to SET with in the required period.
- Personnel announcement. A change in authority of control or management in the listed companies
- Miscellaneous. An ordinary/extraordinary general meeting or other date for conferring, closing the firm share register, listed securities granted by SET and others that do not matched with other announcements.

Panel A of Table 2 presents the descriptive statistics of total sample as well as each category of news announcement. There are 68,722 news announcements in total. Financial Information (*FIN_INFO*) frequently announces the information than other categories (34,498 observations). The frequency of Legal and Miscellaneous (*LEG_MIS*) information and Corporate Investment and Structural Change (*INV_STRUC*) announcements are 22,097 (82.8%) and 12,127 (45.31%) observations, respectively. Table 2, Panel B, presents the summary statistics of news announcement by industry. Conditional on a firm having made at least one disclosure in the relevant category, firms in Service (SERVICE) industry is more frequently announced the news (15,644 announcements or 22.76% from total). The mean number of *FIN_INFO* announcements is the highest in the consumption industry, with an average of 125.5 announcements per firm. The mean number of *INV_STRUC* and *LEG_MIS* announcements is highest in the technology and resource industry, with an average of 65.87 and 97.08 announcements per firm.

Table 2. The descriptive statistics of news announcements

| Type of news announcement | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Corporate Investment & Structure Change (*INV_STRUC*) | | | | Financial Information (*FIN_INFO*) | | | Legal & Miscellaneous (*LEG_MIS*) | | | Total | (%) |
| | Mean | No. of ann. | (%) | Mean | No. of ann. | (%) | Mean | No. of ann. | (%) | | |
| Panel A: All sample | | | | | | | | | | | |
| Total sample | 45.31 | 12,127 | 18 | 122 | 34,498 | 50 | 83 | 22,097 | 32 | 68,722 | |
| Panel B: Grouped by industry | | | | | | | | | | | |
| AGRO | 25 | 1,185 | 10 | 115 | 5,392 | 16 | 61 | 2,884 | 13 | 9,461 | 14 |
| CONSUMP | 19 | 655 | 5 | 126 | 4,518 | 13 | 63 | 2,276 | 10 | 7,449 | 11 |
| INDUS | 26 | 1,086 | 9 | 121 | 5,212 | 15 | 69 | 2,968 | 13 | 9,266 | 13 |
| PROPCON | 57 | 3,512 | 29 | 107 | 6,646 | 19 | 80 | 4,933 | 22 | 15,091 | 22 |
| RESOURC | 59 | 766 | 6 | 106 | 1,375 | 4 | 97 | 1,262 | 6 | 3,403 | 5 |
| SERVICE | 43 | 2,947 | 24 | 113 | 7,821 | 23 | 71 | 4,876 | 22 | 15,644 | 23 |
| TECH | 66 | 1,976 | 16 | 118 | 3,534 | 10 | 97 | 2,898 | 13 | 8,408 | 12 |

Notes: This table presents the summary statistics of news announcement of listed companies on the SET. The three types of news disclosure categories are identified by the SET Regulation & Notification and Securities and Exchange Act B.E. (1992). The first category of news announcement is Corporate Investment and Structural Change announcement (*INV_STRUC*). The second and the third of news type are Financial Information announcement (*FIN_INFO*) and Legal and Miscellaneous announcement (*LEG_MIS*), respectively. This table illustrates the mean of news announcement, total number and percentage of each category of news announcement grouped by industry.

**3.2. Ordinary least squares regressions.** We employ ordinary least squares (OLS) regressions to examine the relationship between firm characteristics intensity of news announcement. The firm-specific characteristics are firm size (*MVALUE*), firm performance (*TobinQ*), financial leverage (*LEV*), firm growth (*GROWTH*), firm age (*AGE*), ownership concentration (*OWN*), industry classification (*D_Industry*), year classification (*D_Year*). The specific measures are defined in the caption for Table 3.

$$NUM_NEWS_{i,t} = \beta_0 + \beta_1 LEV_{i,t} + \beta_2 TobinQ_{i,t} + \beta_3 GROWTH_{i,t} + \beta_4 AGEe_{i,t} + \beta_5 OWN_{i,t} + \\ + \beta_6 Ln(TA)_{i,t} + \beta_7 Ln(MVALUE)_{i,t} + \sum \beta_{8-13} D_Industry + \sum \beta_{14-21} D_Year + \varepsilon_{i,t}, \quad (1)$$

$$INV_STRUC_{i,t} = \beta_0 + \beta_1 LEV_{i,t} + \beta_2 TobinQ_{i,t} + \beta_3 GROWTH_{i,t} + \beta_4 AGEe_{i,t} + \beta_5 OWN_{i,t} + \\ + \beta_6 Ln(TA)_{i,t} + \beta_7 Ln(MVALUE)_{i,t} + \sum \beta_{8-13} D_Industry + \sum \beta_{14-21} D_Year + \varepsilon_{i,t}, \quad (2)$$

$$FIN_INFO_{i,t} = \beta_0 + \beta_1 LEV_{i,t} + \beta_2 TobinQ_{i,t} + \beta_3 GROWTH_{i,t} + \beta_4 AGEe_{i,t} + \beta_5 OWN_{i,t} + \\ + \beta_6 Ln(TA)_{i,t} + \beta_7 Ln(MVALUE)_{i,t} + \sum \beta_{8-13} D_Industry + \sum \beta_{14-21} D_Year + \varepsilon_{i,t}, \quad (3)$$

$$LEG_MIS_{i,t} = \beta_0 + \beta_1 LEV_{i,t} + \beta_2 TobinQ_{i,t} + \beta_3 GROWTH_{i,t} + \beta_4 AGEe_{i,t} + \beta_5 OWN_{i,t} + \\ + \beta_6 Ln(TA)_{i,t} + \beta_7 Ln(MVALUE)_{i,t} + \sum \beta_{8-13} D_Industry + \sum \beta_{14-21} D_Year + \varepsilon_{i,t}. \quad (4)$$

**3.3. Two-stage least square estimation.** We employ two-stage least square (2SLS) regressions to examine how the intensity of each category of news announcement affects the degree of information asymmetry. Diamond and Verrecchia (1991), Lang and Lunholm (1993) Leuz and Verrecchia (2000) and Cheng, Courtenay and Krishnamurti (2005) suggest that firms' policies to increase disclosure can decrease information asymmetry.

To explore the effect of intensity of each category of news announcement on the information asymmetry, we extend Leuz and Verrecchia's (2000) model and measure the degree of information asymmetry using bid-ask spreads, trading volume and price volatility[1]. However, as Leuz and Verrecchia (2000) and Cheng, Courtenay and Krishnamurti (2005) point out, an increase in information disclosure may have endogenous effect on all three proxies of information asymmetry. Therefore, this study uses 2SLS procedure to reduce simultaneity bias. This procedure can be applied to estimate the equation that is likely to suffer endogeneity problem by replacing the endogenous variables with their instrumental variables. In 2SLS method, we first

[1] Bharath, Pasquariello and Wu (2009) and Clarke and Shastri (2000) examine the alternative proxies of information asymmetry based on market microstructure theory such as adverse selection component of bid and ask spread. We choose to adopt firm characteristic proxy in this study.

estimate (2), (3) and (4) in the first stage and use new variable as instrumental variable. An instrumental variable is an excellent proxy for the endogenous variable and is independent of the error term (Studenmund, 2001). The instrumental variable in simultaneous equation can avoid the relation between the error terms and endogenous variables.

The market movement variables, *RESPREAD*, *SHTURNOVER* and *VOLATILTY*, are specified as endogenous variables. As the exogenous variables, we define other explanatory variables in market activity model in equation (5), (6) and (7) as exogenous variables and used them as instrumental variables in simultaneous equation. For instance, the intensity of news announcement, specifically *INV_STRUC*, *FIN_INFO* and *LEG_MIS*, firm size (*TA*), firm's ownership concentration (*OWN*), firm leverage (*LEV*), firm performance (*TobinQ*), firm growth (*GROWTH*), share price (*PRICE*) and dummy variables of year and industry.

$$Ln(RESPREAD_{i,t}) = \beta_0 + \beta_1 INV_STRUC_{i,t} + \beta_2 FIN_INFO_{i,t} + \beta_3 LEG_MIS_{i,t} + \\ + \beta_4 Ln(SHTURNOVER_{i,t}) + \beta_5 Ln(VOLATILITY_{i,t}) + \beta_6 OWN_{i,t} + \beta_7 Ln(TA_{i,t}) + \\ + \sum \beta_{8-14} Dummy\ for\ Industry + \sum \beta_{15-22} Dummy\ for\ Year + \varepsilon_{i,t}, \quad (5)$$

$$Ln(SHTURNOVER_{i,t}) = \beta_0 + \beta_1 INV_STRUC_{i,t} + \beta_3 FIN_INFO_{i,t} + \\ + \beta_4 LEG_MIS_{i,t} + \beta_2 Ln(VOLATILITY_{i,t}) + \beta_5 LEV_{i,t} + \beta_6 TobinQ_{i,t} + \beta_7 GROWTH_{i,t} + \\ + \beta_8 OWN_{it} + \beta_9 Ln(TA_{i,t}) + \sum \beta_{10-15} Dummy\ for\ industry + \sum \beta_{16-23} Dummy\ for\ Year + \varepsilon_{i,t}, \quad (6)$$

$$Ln(VOLATILITY_{i,t}) = \beta_0 + \beta_1 INV_STRUC_{i,t} + \beta_2 FIN_INFO_{i,t} + \\ + \beta_3 LEG_MIS_{i,t} + \beta_4 Lev_{i,t} + \beta_5 TobinQ_{i,t} + \beta_6 GROWTH_{i,t} + \beta_7 OWN_{i,t} + \\ + \beta_8 Ln(TA_{i,t}) + \beta_9 PRICE_{i,t} + \sum \beta_{10-15} Dummy\ for\ industry + \sum \beta_{16-23} Dummy\ for\ Year + \varepsilon_{i,t}. \quad (7)$$

## 4. Empirical results

**4.1. Univariate analysis.** Table 3 presents the summary statistics of firm characteristics and market trading reaction used to be a proxy of information asymmetry during 1995 to 2007. The table describes the statistics of mean, standard deviation, minimum value and maximum value, respectively. The sample data comprises of 2193 observations from non-financial firms on SET. The daily average of relative bid-ask spread (*RESPREAD*), share turnover (*SHTURNOVER*) and price volatility (*VOLATILITY%*) are 0.2, 0.3 and 8.4, respectively.

To illustrate the summary statistics of firm characteristics, the mean of the firm leverage (*LEV*) measuring by debt ratio has the proportion as 0.48. The values of performance (*TobinQ*) of listed companies are average as 1.14. Sukcharoensin (2003) illustrates that Tobin's *Q* ratio above one indicates that the market views the firm's internal organization as exceptionally good or the expected agency costs as particularly small. The book value of sale growth (*GROWTH*) approximates as 10.97 in average. In generally, the percentages of outstanding shares owned by top ten shareholders (*OWN*) are 70.12, ranging from a high of 191.28% to a low of 2.98%. Firms in the sample have an *AGE* of 23.23 years. To measure the size of firms, it is measured by the book value of total assets (*TA*) and the market value of equity (*MVALUE*). The *TA* and *MVALUE* have average value as 6914.64 million Baht and 2581.89 million Baht, respectively. Finally, the average of security price traded on SET is 36.34 Baht.

In addition, this study utilizes univariate analysis to investigate the interrelation between the intensity of news announcement, firm characteristics and market trading movement. Nonetheless, the variables used to examine in this paper are derived after testing for normal distribution plot of each variable. This research also finds that *TA*, *MVALUE*, *RESPREAD*, *SHTURNOVER* and *VOLATILITY* are not normally distributed. Therefore, to make the data conform to normal distribution, *TA*, *MVALUE*, *RESPREAD*, *SHTURNOVER* and *VOLATILITY* are transformed by logarithm function into Ln(*TA*), Ln(*MVALUE*), Ln(*RESPREAD*), Ln(*SHTURNOVER*) and Ln(*VOLATILITY*), respectively.

Table 3. Summary statistic of firm characteristics and market reaction

| Variable | Mean | Std. dev. | Maximum | Minimum |
|---|---|---|---|---|
| Market activity variables | | | | |
| *RESPREAD* | 0.20 | 0.33 | 2.00 | 0.01 |
| *SHTURNOVER* | 0.30 | 0.63 | 9.18 | 0.00 |
| *VOLATILITY* | 8.40 | 53.48 | 1875.00 | 0.00 |

Table 3 (cont.). Summary statistic of firm characteristics and market reaction

| Variable | Mean | Std. dev. | Maximum | Minimum |
|---|---|---|---|---|
| Firm characteristics variables | | | | |
| *LEV* | 0.48 | 0.26 | 2.03 | 0.00 |
| *TobinQ* | 1.14 | 0.73 | 10.55 | 0.13 |
| *GROWTH* | 10.97 | 175.91 | 3569.00 | -5939.00 |
| *OWN* | 70.12 | 16.80 | 191.28 | 2.98 |
| *AGE* | 23.23 | 14.86 | 121.00 | 1.00 |
| *TA* (million Baht) | 6914.64 | 17380.78 | 269067.17 | 201.76 |
| *MVALUE* (million Baht) | 2581.90 | 6232.09 | 121799.00 | 0.00 |
| *PRICE* (Baht) | 36.34 | 70.26 | 1382.00 | 0.04 |

Notes: This table presents descriptive statistics of firm characteristics and market trading reaction. *RESPREAD* is the relative bid-ask spread defined as [(*Ask Price – Bid Price*)/ [(*Ask price + Bid Price*)/2]]. *SHTURNOVER* is the average daily of share turnover calculated from the proportion of traded shares to outstanding shares. *VOLATILITY* (%) is computed as the standard deviation of daily security return. As the firm characteristics variables, *LEV* is calculated as the book value of total liability divided by the book value of total asset at the end of fiscal year. *TobinQ* is defined as [(*market value of outstanding equity + the book value of total liability*) / *the book value of total asset*]. *GROWTH* is the percentage change of annual sales. *AGE* is the duration of firms since they have been established. *OWN* is defined as percentage of outstanding shares owned by top ten largest shareholders. *TA* and *MAVALUE* are calculated as the book value of total assets and market value of common stock at the end of fiscal year. Finally, *PRICE* is the average daily share price.

**4.2. Multivariate analysis results: OLS analysis on intensity of news announcement.** Table 4 presents the coefficient estimates from Model (1). First, the coefficient estimate for firm size (*MVALUE*) and firm performance (*TobinQ*) are positive and statistically significant, suggesting a strong relationship between firm size, firm performance and disclosure. Second, the coefficient estimate for firm leverage (*LEV*) is positive and statistically significant, indicating that firms with high financial leverage provide more information than the low leverage firms. Third, the positive relation between *GROWTH* and firm disclosure implies the high growth firms disclose more information than the low growth firms consistent with the findings of Lang, Lin and Miller (2003). The inverse relationships between *OWN* and firm disclosure suggest that the high ownership concentration firms disclose less corporate information and are less transparency than the low ownership concentration firms. This finding is consistent with Cheng, Courtenay and Krishnamurti (2005) illustrating that firms with high ownership concentration disclose more information to diminish the agency cost of firms.

**4.3. Multivariate analysis results: intensity of each category of new announcement.** Table 5 presents the coefficient estimates from (Model (2), (3) and (4)). The coefficient estimates for *INV_STRUC* regression (Model (2) indicate positive relationship between intensity of Investment and Structural Change announcement and firm size (*TA*), high growth firms (*MVALUE*) and high performance firms (*TobinQ*) but no statistically significant relationship to firm leverage (*LEV*) and firm age (*AGE*). Furthermore, the firms that frequently announce this type of news have low ownership concentration. Most of the dummy variables of year and industry are significant, indicating that year and industry differences influence the news disclosure.

Table 4. Regression results of the effect of news announcement on firm-specific characteristics

| Firm characteristics | *NUM_NEWS* | |
|---|---|---|
| | Coefficient estimates | *P*-value |
| Constant | -26.0380*** | 0.000 |
| *LEV* | 3.3690*** | 0.002 |
| *TobinQ* | 2.9987*** | 0.000 |
| *GROWTH* | 0.0040*** | 0.003 |
| *AGE* | 0.0044 | 0.836 |
| *OWN* | -0.0313* | 0.058 |
| Ln(*TA*) | 6.6290*** | 0.000 |
| Ln(*MVALUE*) | 0.9572*** | 0.000 |
| Adj. $R^2$ | 0.379996 | |

Notes: This table presents regression results from the ordinary least square regression. *NUM_NEWS* is the frequency of total news announcement. *LEV* is calculated as the book value of total liability divided by the book value of total asset at the end of fiscal year. *TobinQ* is defined as [(*market value of outstanding equity + the book value of total liability*) / *the book value of total asset*]. *GROWTH* is the percentage change of annual sales. *AGE* is the duration of firms since they have been established. *OWN* is defined as percentage of outstanding shares owned by top ten largest shareholders. Ln(*TA*) and Ln(*MAVALUE*) are the logarithm of book value of total assets and logarithm of market value of common stock at the end of fiscal year. The differences of year and industry effect are not reported in this table. *, ** and *** indicate statistical significant at 10%, 5% and 1% levels, respectively.

The second regression (Model (3)) presents the relationship between the intensity of Financial Information announcement (*FIN_INFO*) and firm characteristics. The results suggest that firms with high disclosure in financial information category are

larger firms and have more financial leverage than the low disclosure firms in these types of disclosure. Specifically, only *LEV*, Ln(*TA*) and Ln(*MVALUE*) have positive and statistically significant relation with *FIN_INFO* announcement. The last regression (Model (4)) presents the relationship between the intensity of Legal and Miscellaneous announcement (*LEG_MIS*) and firm characteristics. The coefficient estimates of *TobinQ*, *GROWTH*, Ln(*TA*) and Ln(*MVALUE*), *LEV* are positively and statistically significantly, suggesting that firms frequently disclose the Legal and Miscellaneous information are large firms, highly leverage form, firms with superior performance and growth opportunity. Most of year and industry dummy variables have significant effect on *LEG_MIS* information.

Overall, our findings suggest that the type of news announcement is significantly correlated with firm-specific characteristics. In particular, larger firms, firms with higher growth opportunity and superior operating performance tend to disclose Investment Structural Change information and Legal and Miscellaneous information more frequently.

Table 5. Regression results of the effect of news announcement on firm-specific characteristics by news type

| Firm characteristics | *INV_STRUC* | | *FIN_INFO* | | *LEG_MIS* | |
|---|---|---|---|---|---|---|
| | Coefficient estimates | *P*-value | Coefficient estimates | *P*-value | Coefficient estimates | *P*-value |
| Constant | -19.3429*** | 0.000 | 2.6685* | 0.089 | -9.3636*** | 0.000 |
| *LEV* | 0.8529 | 0.192 | 1.4721*** | 0.001 | 1.0438** | 0.038 |
| *TobinQ* | 1.7657*** | 0.000 | 0.1429 | 0.253 | 1.0901*** | 0.000 |
| *GROWTH* | 0.0013* | 0.071 | 0.0006 | 0.174 | 0.0020*** | 0.000 |
| *AGE* | 0.0013 | 0.915 | 0.0016 | 0.823 | 0.0014*** | 0.896 |
| *OWN* | -0.0384*** | 0.000 | -0.0012 | 0.805 | 0.0083 | 0.298 |
| Ln(*TA*) | 2.7100*** | 0.000 | 1.1286*** | 0.000 | 2.7905*** | 0.000 |
| Ln(*MVALUE*) | 0.5256*** | 0.000 | 0.0988** | 0.029 | 0.3328*** | 0.000 |
| Adj. $R^2$ | 0.258119 | | 0.260035 | | 0.399321 | |

Notes: This table presents regression results from the ordinary least square regression. *INV_STURC* is the intensity of Investment and Structural Change announcement category. *FIN_INFO* is the intensity of Financial Information announcement categories. *LEG_MIS* is the intensity of Legal and Miscellaneous announcement category. *LEV* is calculated as the book value of total liability divided by the book value of total asset at the end of fiscal year. *TobinQ* is defined as [(*market value of outstanding equity + the book value of total liability*) / *the book value of total asset*]. *GROWTH* is the percentage change of annual sales. *AGE* is the duration of firms since they have been established. *OWN* is defined as percentage of outstanding shares owned by top ten largest shareholders. Ln(*TA*) and Ln(*MAVALUE*) are the logarithm of book value of total assets and logarithm of market value of common stock at the end of fiscal year. The differences of year and industry effect are not report in this table. *, ** and *** indicate statistical significant at the 10%, 5% and 1% levels, respectively.

**4.4. 2SLS estimation on bid-ask spread, share turnover and price volatility.** We use 2SLS regressions to estimate the consequences of increasing news announcement on market trading reaction proxy for information asymmetry as shown in equation (5), (6) and (7). Before examining the impact of level of news announcement in each category on market reaction, we investigate the overall level of news announcement, (*NUM_NEWS*), the effect on market reaction through bid-ask spread, share turnover and price volatility.

Panel A of Table 6 (see Appendix) presents the effect of intensity of news announcement on the market trading reaction. The results indicate that *NUM_NEWS* is significantly and negatively correlated with *RESPREAD* at the 1% level. On the contrary, *NUM_NEWS* is significantly and positively interrelated with *SHTURNOVER* and *VOLATILITY* at 1% the level. *RESPREAD*, *SHTUR-NOVER* and *VOLATILITY* are described by the explanatory variables in the regression model at 43.43%, 21.53% and 34.19%, respectively. The results of 2SLS estimation show that the overall *F*-statistic in *RESPREAD*, *SHTURNOVER* and *VOLATILITY* models are significant at the 1% level which suggests that firms' policies to increase the intensity of news announcement can diminish the information asymmetry between informed and uninformed traders. These results are consistent with numerous studies such as Diamond and Verrecchia (1991), Lang and Lunholm (1993), Botosan (1997), Leuz and Verrecchia (2002) and Cheng, Courtenay and Krishnamurti (2005).

The first 2SLS regression in Table 6, Panel B, presents the result of intensity of each category of news announcement on relative bid-ask spreads Ln(*RESPREAD*) (Model (5)). The overall *F*-test in this regression model is significant at the 1% level. The relative bid-ask spread model is highly significant and described at 37.99% by explanatory variables. The intensity of *INV_STRUC* and *LEG_MIS* announcement is negatively correlated with Ln(*RESPREAD*) at the 1% and 10% levels. The firm size, share turnover have negative interrelation at the 1% level while price volatility

and firms' ownership concentration are positively related to Ln(*RESPREAD*). Moreover, the marginal effects of year and industry dummy variables are significant. This result implies that firms with high disclosure of the *INV_STRUC* and *LEG_MIS* information can reduce the securities' relative bid-ask spread. In other words, increasing *INV_STRUC* and *LEG_MIS* information can diminish information asymmetry.

The second 2SLS regression reports the result of intensity of each category of news announcement on share turnover model (Model (6)). The 2SLS estimation model is significant at 1% level as shown by *F*-statistics. Adjusted $R^2$ indicating the percentage of total variation of dependent variable (Ln(*SHTURNOVER*) explained by explanatory variables) is 7.74%. The coefficients of the intensity of news announcement for all three categories, particularly *INV_STRUC*, are highly significant and positively correlated with Ln(*SHTURNOVER*). Consistent with expectation, Ln(*VOLATILITY*), *OWN* and Ln(*TA*) have significant and negative relation with average daily share turnover whereas *LEV* has a significant and positive relation with average daily share turnover. However, *TobinQ* and *GROWTH* do not show significant effect. Our results further suggest that the marginal effect of difference in years and industries are also significant. The finding indicates that firm's reporting strategy, specifically *INV_STRUC*, can induce the average daily share turnover. In other words, increasing news announcements in all three categories could diminish the information asymmetry problem.

Lastly, we investigate the effect of each category of news announcement on the price volatility, another proxy for information asymmetry. The 2SLS estimation in model (7) is significant at the 1% level. *INV_STRUC* and *LEG_MIS* information are positively and significantly interrelated with Ln(*VOLATILITY*) at the 1% level, but *FIN_INFO* information is insignificant. The investors' trading behaviors are highly sensitive to the rising of news announcement, especially *INV_STRUC* information. The possible explanation is that the intensity of news announcement perhaps encourages higher price fluctuation[1]. In other words, it is possibly that investors tend to frequently adjust their trading strategies and their revision of beliefs relative to news announcement (Mcnichols and Manegold, 1983).

[1] Moreover, if all firms had identical disclosure policies, then those firms that had more volatile and uncertain fundamentals or more objectively determined reasons for disclosure may: (1) disclose more in response; and (2) have more volatile stocks as a result of their greater intrinsic uncertainty. They might also tend to have larger bid-ask spreads, which would imply that the estimated negative impact of disclosure on bid-ask spread could underestimate the true relation because of this unobserved heterogeneity.

Overall, the results show that the intensity of each category of news announcement indirectly and directly explains *RESPREAD*, *SHTURNOVER* and *VOLATILITY* as proposed in hypothesis (5), (6) and (7), respectively. That is, a commitment to increase the corporate disclosure and transparency of firms especially the category of Investment and Structural Change information, as well as, Legal and Miscellaneous information.

## Conclusions

The purpose of this study is to examine the effects of corporate announcement in two respects. First, this paper examines which types of firms are willing to disclose the news to public and which type of news they are likely to disclose. Second, the paper further explores how each type of news announcement influences the market trading movement by the mean of 2SLS estimation. This paper provides a number of findings. First, the determinants that induce firms to increase news announcement are the characteristics of firms such as firm leverage, firm performance, firm growth, firm size and firm' ownership concentration. The high leverage firms are motivated to increase news announcements, especially financial information. The firms with high opportunity growth and having good performance are likely to disclose the Investment and Structural Changes, together with, Legal and Miscellaneous information than firms with low growth and poor performance. Moreover, firms with large size and having low ownership concentration frequently disclose the investment and structural change as well as Legal and Miscel-laneous information than firms with small size and having high ownership concentration.

Second, this study analyzes whether firm' policies of increasing the corporate disclosure and transparency can reduce information asymmetry among insiders and outside investors. The empirical results demonstrate that listed companies in Thailand with high corporate transparency and disclosure, particularly in Investment and Structural Change as well as Legal and Miscellaneous information have low relative bid-ask spreads and high share turnover. Conclusively, the evidence supports the notion that increasing corporate disclosure and transparency can reduce the asymmetric information between informed and uninformed traders.

Our results provide new evidences presenting not only that the firm characteristics influence corporate disclosure strategy, but also that information asymmetry tend to diminish associated with increasing firm transparency. Furthermore,

the findings provide insightful information to various market participants such as financial managers, investors and regulators. The findings suggest financial managers to plan the proper reporting strategy. Investors can interpret information disclosure and transform it to prudent investment strategy.

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## Appendix

Table 6. 2SLS analysis on bid-ask spread, share turnover and price volatility

| Panel A: First stage 2SLS | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Market reaction variable | Constant | Disclosure variables *NUM_NEWS* | Control Variable | | | | | | | | Adj. $R^2$ | *F*-stat (*P*-value) |
| | | | Ln(*SHTURNOVER*) | Ln(*VOLATILITY*) | *LEV* | *TobinQ* | *GROWTH* | *OWN* | Ln(*TA*) | Ln(*PRICE*) | | |
| Ln(*RESPREAD*) [a] | -3.7648*** | -0.0115*** | -0.3330*** | 1.5397*** | - | - | - | 0.0042 | 0.1457*** | - | 0.4343 | 88.0694 |
| | 0.0000 | 0.0004 | 0.0043 | 0.0000 | - | - | - | 0.1457 | 0.0000 | - | | 0.0000 |
| Ln(*TURNOVER*) [b] | 1.1705 | 0.0231*** | - | -0.6218** | 0.9702*** | 0.0712 | 0.0000 | -0.0221*** | -0.2885** | - | 0.2153 | 28.7451 |
| | 0.2960 | 0.0000 | - | 0.0455 | 0.0000 | 0.1156 | 0.9363 | 0.0000 | 0.0151 | - | | 0.0000 |
| Ln(*VOLATILITY*) [c] | 3.1163*** | 0.0085*** | - | - | 0.1829*** | 0.0938*** | 0.0002*** | -0.0021** | -0.1633*** | -0.1618*** | 0.3419 | 40.1294 |
| | 0.0000 | 0.0000 | - | - | 0.0097 | 0.0000 | 0.0085 | 0.0170 | 0.0000 | 0.0000 | | 0.0000 |
| Panel B: Second stage 2SLS | | | | | | | | | | | | | |
| Market reaction variable | Constant | Disclosure variable[s] | | | Control Variable | | | | | | | Adj. $R^2$ | *F*-stat (*P*-value) |
| | | *INV_STRUC* | *FIN_INFO* | *LEG_MIS* | Ln(*SHTURNOVER*) | Ln(*VOLATILITY*) | *LEV* | *TobinQ* | *GROWTH* | *OWN* | Ln(*TA*) | Ln(*PRICE*) | |
| Ln(*RESPREAD*) [b] | -4.0918 | -0.0247*** | 0.0006 | -0.0129* | -0.2479*** | 0.9060*** | - | - | - | 0.0058** | -0.5049 | - | 0.3799 | 100.7644 |
| | 0.0000 | -0.0001 | 0.9187 | 0.0745 | 0.0061 | 0.0000 | - | - | - | 0.0456 | 0.0000 | - | | 0.0000 |
| Ln(*SHTURNOVER*) [c] | 2.7334 | 0.0484*** | 0.0144* | 0.0251** | - | -0.6575*** | 1.4581*** | 0.0389 | 0.0002 | -0.0254*** | -0.3483*** | - | 0.0774 | 31.6694 |
| | 0.0192 | 0.0000 | 0.0976 | 0.0006 | - | 0.0001 | 0.0000 | 0.5828 | 0.5798 | 0.0000 | 0.0027 | - | | 0.0000 |
| Ln(*VOLATILITY*) [d] | 6.0509 | 0.0214*** | 0.0077 | 0.0161** | - | - | 0.4029*** | 0.1418 | 0.0004 | -0.0027 | -0.2809*** | -0.3087*** | 0.3924 | 62.5263 |
| | 0.0000 | 0.0000 | 0.1757 | 0.0194 | - | - | 0.0016 | 0.1769 | 0.2713 | 0.1241 | 0.0000 | 0.0000 | | 0.0000 |

Notes: This table presents the results of 2SLS estimation on each type of news announcement and the market trading reaction. Market reaction variables are used to measure the information asymmetry problem. Ln(*RESPREAD*) is the logarithm of relative bid-ask spread defined as Ln[(*Ask price – Bid Price*)/[(*Ask price + Bid price*)/2]]. Ln(*SHTURNOVER*) is the logarithm of average daily of share turnover calculated from the proportion of traded shares to outstanding shares. Ln(*VOLATILITY*) is computed as the logarithm of standard deviation of daily security return. The disclosure variables measure the frequency of news announcement in each firm. *NUM_NEWS* is the frequency of total news announcement in each year. *INV_STURC* is the intensity of Investment and Structural Change announcement category. *FIN_INFO* is the intensity of Financial Information announcement categories. *LEG_MIS* is the intensity of Legal and Miscellaneous announcement category. *LEV* is the proportion of the book value of total liability to the book value of total asset at the end of fiscal year. *TobinQ* is the ratio of market value of outstanding equity plus the book value of total liability divided by the book value of total asset. *GROWTH* is the percentage change of annual sales from the previous year. *AGE* is the duration of firms since they have established. *OWN* is defined as percentage of outstanding shares owned by the ten largest shareholders. Ln(*TA*) is the logarithm of book value of total assets at the end of fiscal year. Finally, Ln(*PRICE*) is the logarithm of daily share price. The differences of year and industry effect are not reported in this table. *, ** and *** indicate significant at the 10%, 5% and 1% levels, respectively.