# Different Trading Reactions of Retail Investors to Earnings Announcements of Energy Firms and Non-energy Firms

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Abstract—This study investigates the trading behavior of retail investors around quarterly earnings announcements of firms in the energy sector compared to the other firms in the Stock Exchange of Thailand. Trading behavior of retail investors is observed via their abnormal trading volume. Event study with a total of 344 firm-event samples shows that no abnormal trading volume occurs after earnings announcements of stocks in the energy sector. Contrastingly with the non-energy firms, which have significant abnormal trading volume in their post-announcement period. This implies different reactions of retail investors to earnings announcements due to the firm's business. Our result is consistent with Chae's [1] explanation and empirical test about the impact of companies' sectors on investors trading around their earnings announcements, especially petroleum companies.

#### Keywords—Energy firm, industry effect, Trading volume, Trading behavior, earnings announcement

#### I. INTRODUCTION

Industry is one of the factors that is widely used in financial research and literature. Many previous studies asserted the effect of industry on investment such as the effect on abnormal returns [2], portfolio return [3] - [5], returns from momentum trading strategy [6], and also on crowdfunding [7]. Trading volume, as the result of investment decision, has also been studied in relations to firm's industry. Some of the literatures confirm the industry effect on trading volume [1, 8, 9] but some have shown contradictory results [10], [11]. With this controversial outcome, this study highlights the effect of industry on trading behavior. Energy industry, trading volume of retail investors, and quarterly earnings announcement are selected to observe the effect of the industry on trading behavior.

This study focuses on energy firms because they are the largest sector in Thai stock market in terms of market capitalization, with high trading volume and value, attracting lots of attentions from market participants [12]. Moreover, energy companies have an impact on everyone's daily lives. As a result, energy prices such as oil prices, gas prices, electricity and water bills, and even crude oil prices index are reported in the media on a daily basis. With plenty of public information available, earnings announcements of energy

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firms may contain less surprising information compared to firms in other sectors [1].

Retail investor is selected since they are the investor group that plays the largest proportion in term of trading value on The Stock Exchange of Thailand (SET) and scheduled event as quarterly earnings announcement is the proper situation to observe the trading behavior of investors [13] - [16].

We utilize the event study method and independent-group t-test in order to test 3 hypotheses on the relation between quarterly earnings announcement, firm's industry, and retail investors' abnormal trading volume. The first and second hypotheses propose that quarterly earnings announcement affects retail investors' trading, while the third hypothesis suggests different reactions to earnings information from retail investors due to the industry of the firms. Our data is from SETSMART database by focusing on 9 energy firms and 27 non-energy firms listed and remained in the SET50 index from 2012 to 2015. 344 total event-firm samples are delivered. Trading volume is gathered from the insight market microstructure data from SET. This unique dataset enables us to focus solely on trading behavior of retail investors for the hypotheses testing.

Findings from this study provide insights into 1) how retail, or individual, investors respond to scheduled public information in the market, 2) their trading behavior according to industry/sectors, and 3) provide evidences about relation between firm's industry and trading volume in the Thai market context.

Remainder of the paper is organized as follows: Section 1 is an introduction. Section 2 is the literature review and hypothesis development. Section 3 is data, methodology, and measurement of variables. Section 4 contains results and Section 5 provides conclusion.

#### II. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Event studies on corporate announcement are based on the information asymmetry theory, which states that there is a disparity in information between insiders and investors [17]. Investors, as outsiders who always have less information about the firms, reflect financial events as a signal of information content from insiders [13]. According to Ball & Brown [14] and Kim & Verrecchia [15], earnings

announcements, as financial events, indicate certain information about a firm's future value, which may influence investors' expectations about the firm's stock price and its investment return. As a result, investors must frequently adjust their portfolios following earnings reports, resulting in unusual trading volume around such event.

As the outsiders, investors incur an information disadvantage prior to announcements. Thus, they will trade less due to asymmetric information in order to avoid adverse-selection problems [18], [19]. Correspondingly, Chae's [1] empirical study indicated that trading volumes were reduced prior to scheduled announcements as a result of uninformed investors' adverse-selection avoidance.

According to the theories and previous study mentioned above that displayed the effects of earnings announcement on investors' trading behavior in both pre- and postannouncement periods, regardless of the firms' industries. We have established hypothesis 1 and 2 as follow:

Hypothesis 1: There are abnormal trading volumes surrounding quarterly earnings announcements of stocks in energy sector.

Hypothesis 2: There are abnormal trading volumes surrounding quarterly earnings announcements of stocks in other sectors than energy sector.

Although abnormal trading volumes from earnings announcement occur in every industry. Some industries and/or sectors may deliver different results than others [4]. As unique characteristic of each business, earnings announcements from companies in different industries provide varying amounts of new information. Oil companies' performance, for instance, is highly related to oil market prices. This is the public information shown in everyday life. Therefore, earnings announcement from these firms may release less surprising information than others and may potentially lower the trading volume [1]. In addition, study of Linsmeier, Thornton, Venkatachalam, & Welker [20] show less trading volume of the energy firms after their 10-k disclosures. For this reason, hypothesis 3 is formed as follows:

*Hypothesis 3: In post-announcement period, stocks in energy sectors have lower abnormal trading volumes compared to stocks in other sectors.* 

# III. DATA, METHODOLOGY, AND MEASUREMENT OF VARIABLES

### A. Data

Samples are acquired from quarterly earnings announcements of 36 firms that were listed and remained in the SET50 index between 2012 and 2015. There are 344 event-firm available after the stack events such as acquisition, dividend, or CEO resignation have been filtered out (91 eventfirms for the energy sector and 253 event-firms for nonenergy). These data acquired from SETSMART database. Daily trading volumes of Thai investors, which are the insight and specialty data for this research, are obtained from market microstructure data of The Stock Exchange of Thailand.

#### B. Methodology and Measurement of Variables

Event study is adopted to examine the trading behavior of Thai investors around quarterly earnings announcements. The announcement date is set as day 0. The estimation period and event period are -35 to -6, and -5 to 5, respectively. Expected trading volumes are calculated by constant mean method. Then, abnormal trading volumes are tested for their significance by using t-test.

Full day trading volume was developed by aggregating all buy volume and sell volume for a firm over the course of a day for institutions and retail investors, as can be seen from the equation (1).

$$TV_{it} = \frac{Buy_{it} + Sell_{it}}{Share_{it}}$$
(1)

Where  $TV_{it}$  stands the full day trading volume of investor group g on firm i at day t,  $Buy_{it}$  and  $Sell_{it}$  mean net buy and net sell, and Share<sub>it</sub> is the total common stock of the firm. While expected trading volume is calculated on constant mean basis as (2).

$$\bar{V}_i = \frac{1}{t} \sum_{t=-35}^{t=-6} T V_{it}$$
<sup>(2)</sup>

Then abnormal trading volume can be determined as a single (3) and groups of events (4).

$$AV_{it} = TV_{it} - \bar{V}_i \tag{3}$$

$$AAV_{te} = \frac{1}{n} \sum_{e=1}^{n} AV_{te} \tag{4}$$

## IV. RESULTS AND DISCUSSION

Table 1 shows the descriptive statistics of the daily trading volume of retail investors. From 36 firms listed and remained on SET50 during 2012-2015. There are 9 energy firms and 27 non-energy firms. According to event study basis, the abnormal trading volumes of retail investors around quarterly earnings announcements (t-5 to t+5) are presented in table 2.

TABLE I. DESCRIPTIVE STATISTICS OF DAILY TRADING VOLUME

Period	Sector	n	Mean	SD	Min	Max	
2012	Energy	2,196	2,662.06	4,335.85	22.90	66,419.84	
	Others	6,588	2,927.17	4,978.40	60.00	87,936.93	
2013	Energy	2,205	1,962.59	3,255.37	46.14	36,708.35	
	Others	6,615	3,271.35	6,138.68	37.46	81,578.26	
2014	Energy	2,205	1,794.05	3,052.92	10.87	42,372.05	
	Others	6,615	2,222.80	4,109.66	19.56	119,605.17	
2015	Energy	2,187	2,005.96	3,167.11	20.58	38,062.02	
	Others	6,561	1,634.74	2,250.08	27.82	33,793.64	

**Note:** (1) This table reports the descriptive statistics of daily trading volume during 2012 - 2015. (2) Daily trading volume are calculated as equation 1 and shown as  $10^6$  multiplications. (3) This data is aggregated from 9 energy and 27 non-energy securities listed and remained on SET50 between 2012 – 2015. Table 2 shows that Thai retail investors follow a similar trading pattern in response to announcements in both energy and other sectors. Both sectors started with negative AAV in the pre-announcement period and then showed positive AAV after the announcements. This means that retail investors reduce their trading volume before the event and then increase it after the earnings are announced. The day after the announcement is the most active day in both groups. The highest positive abnormal trading volumes are at 328 for energy sectors and 1,310 for other sectors.

Even abnormal trading volume from retail investors is going in the same direction for both groups of firms. In the post-announcement period, there is no statistical significance of abnormal trading volume in energy sector. In other sectors, retail investors increase their trading abnormally for 3 consecutive days (t+1 to t+3) with t-statistics of 5.11, 2.46, and 2.12 respectively.

These results indicate the effect of quarterly earnings announcement on trading behavior of retail investors. Thus, Hypothesis 1 and Hypothesis 2 are accepted. There are abnormal trading volumes surrounding the events from both energy and non-energy firms which is aligned with information asymmetry theory [18], [19], signaling theory [13] - [15], and also previous studies [21] - [23]. Although abnormal volumes are not displayed in post-announcement of energy firms.

TABLE II. DAILY AVERAGE ABNORMAL TRADING VOLUME

Relative	Energy	Sector (n = 91)	Other Sectors (n = 253)		
Day	AAV	t-statistics	AAV	t-statistics	
-5	-190	-0.98	-290	-1.67*	
-4	-210	-0.79	-330	-1.72*	
-3	-200	-1.08	-250	-1.67*	
-2	-400	-2.00**	-400	-1.69*	
-1	-570	-3.22***	41	0.13	
0	-90	-0.25	296	0.87	
1	328	1.47	1,310	5.11***	
2	263	0.81	721	2.46**	
3	-100	-0.39	491	2.12**	
4	-290	-0.83	27	0.13	
5	-280	-0.96	415	1.30	

Note) :1( AAV is abbreviation of Average Abnormal Trading volume and shown as 10<sup>6</sup> multiplications) 2( test statistic of t-stat, Ho, is AAV is not different from ) 03 (\*, \*\*, and \*\*\* indicate significance at 0.1, 0.05, and 0.01 respectively

This trading behavior can be explained that earnings announcement of energy firm contains less pricing information. Most of their performances are subjected to the market price of their energy products, such as oil, gas, and electricity prices, which are reported to public prior to earnings disclosure. Another explanation about this phenomenon is the firm's size effect. Since energy firms are the big-cap stocks with high trading volume and value, analysts have been assigned to cover the firms in energy sector. The more analyst coverage, the more firm's information will be processed and conveyed to the public [12]. So, earnings disclosure of energy firms does not surprise retail investors enough and is unlikely to influence their investment decisions.

To make the trading pattern of energy sector and other sectors more visible, the average abnormal trading values from table 2 are cumulated and shown in figure 1.

As illustrated in Figure 1, even the trading behaviors of Thai investors surrounding energy and other sectors quarterly earnings announcements are similar, particularly during the pre-announcement period. Significant difference is shown in post-announcement period; the energy sector is just slightly higher on t+1 and t+2 while others have a clear reversal of trading volume and break the 0 line immediately on the day after the announcement. In order to clarify the differences in abnormal trading volumes of energy firms and others, independent-group t-test is conducted in table 3.

Fig. 1. Cumulative Average Abnormal Trading Volume (CAAV)



TABLE III. MEAN DIFFERENT *T*-TEST OF ABNORMAL TRADING VOLUME

Periods	Energy		Others		Mean Difference		
	AAV	t-value	AAV	t-value	AAV	t-value	
Pre- announcement (average -5, -1)	-310	-3.39***	-250	-2.48**	67	0.49	
Post- announcement (Average 1, 5)	-20	-0.13	593	5.00***	610	3.45***	

Note) :1( AAV, Average Abnormal Volume, shown as 10<sup>6</sup> multiplications;) 2 (*t*-stat of H<sub>0</sub> AAV in Columns 2 and 3 is not different from );03 (H<sub>0</sub> in Column 4 for both groups of investors has no difference in their average abnormal trading volume;) 4\* (, \*\*, and \*\*\*indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

According to table 3, Thai investors lower their trade prior to the announcement on both energy and other sectors as the average AAV values shown in Columns 2 and 3 are negative with statistical significances at 0.01 and 0.05 levels respectively. The insignificant mean difference in preannouncement proves that there is no difference in trading behavior between two sectors in this period.

However, controversial result is shown after the event. There is no abnormal trading volume from energy firms while firms in other sectors show a strong positive of abnormality with 0.01 significant level. Moreover, there is significant mean difference between abnormal trading volume of stocks in both groups.

The result of the independent-group t-test in this section confirms the previous results in table 2 and figure 1 and provide empirical evidences that retail investors trade differently according to the sectors. Therefore, Hypothesis 3 is accepted. Energy firms have lower abnormal trading from retail investors compared to other non-energy firms in postannouncement period. This result is consistent with the previous studies of Chae [1] that energy firms have lower trading volume and return after earnings announcement since their earnings disclosure carries less pricing information than others. This proves that there is an industry effect on the trading volume of retail investors after firm's earnings information is released.

#### V. CONCLUSION

This study aims to examine the different reactions of retail investors between firms in the energy sector and others around their quarterly earnings announcements by utilizing data from 9 energy firms and 24 non-energy firms listed and remained in the SET50 index between 2012 and 2015.

Event study result finds that retail investors have similar trading patterns in general around the announcements of both energy and non-energy firms. They lower their trading activities prior to the event then increase after the event is announced. Though there is a reversal of abnormal trading volume, from negative to positive, of energy firms in postannouncement period, no significance is shown. However, firms in other sectors have significant positive abnormal trading volume for 3 consecutive days after announced. In addition, comparison of the average abnormal trading volumes between energy firms and the others around quarterly earnings announcements also confirms that there is no significant abnormal trading volume after quarterly earnings announcement of energy firms and this indicates that nonenergy firms have significantly higher degree of abnormal trading volume in post-announcement periods compared to firms in energy sector.

Our findings point out that 1) earnings announcement has an effect on retail investors trading and 2) retail investors on the Stock Exchange of Thailand trade differently when facing earnings announcements of stocks in energy sector compared to non-energy firms. These findings contribute evidence of the industry effects on trading reaction of Thai retail investor to earnings announcement. Therefore, industry factors can be used as a variable for further study in the trading volume and trading behavior on Thai market.

However, most of the energy firms in Thailand are the bigcap. Further study may design to find out that this trading phenomenon is subjected to industry effect or size effect. As well as earnings information, positive and negative earnings surprise may play an important part here too.

#### REFERENCES

- [1] J. Chae, "Trading Volume, Information Asymmetry, and Timing Information," *J. Finance*, vol. 60, no. 1, pp. 413-442, Feb. 2005.
- [2] G. F. Waring, "Industry Differences in the Persistence of Firm-Specific Returns," Am. Econ. Rev., vol. 86, no. 5, pp. 1253-1265, 1996.
- [3] K. C. J. Wei, and K. M. Wong, "Tests of inflation and industry portfolio stock returns," *J. Econ. Bus.*, vol. 44, no. 1, pp. 77-94, Feb. 1992.
- [4] J. Lewellen, "The time-series relations among expected return, risk, and book-to-market," *J. financ. econ.*, vol. 54, no. 1, pp. 5-43, Oct. 1999.
- [5] L. K. C. Chan, J. Lakonishok, and B. Swaminathan, "Industry Classifications and Return Comovement," *Financ. Anal. J.*, vol. 63, no. 6, pp. 56-70, Nov. 2007.
- [6] T. J. Moskowitz and M. Grinblatt, "Do Industries Explain Momentum?," J. Finance, vol. 54, no. 4, pp. 1249-1290, Aug. 1999.
- [7] S. Johan, and Y. Zhang, "Investors' industry preference in equity crowdfunding," J. Technol. Transf., 2021.
- [8] E. Bajo, "The Information Content of Abnormal Trading Volume," J. Bus. Finance Account., vol. 37, no. 7-8, pp. 950-978, Jul. 2010.
- [9] F. Nassirzadeh, M. Salehi, and R. Sarvghadi, "The effect of financial indicators on trading volume of the listed companies on the Tehran Stock Exchange," *Int. Bus. Res.*, vol. 8, no. 5, pp. 176-194, Apr. 2015.
- [10] A. Dodonova, "Variability of realized stock returns and trading volume," *Appl. Econ. Lett.*, vol. 23, no. 9, pp. 674-677, Jun. 2016.
- [11] C. M. C. Lee and B. Swaminathan, "Price Momentum and Trading Volume," J. Finance, vol. 55, no. 5, pp. 2017-2069, Oct. 2000.
- [12] H. Hong, T. Lim, and J. C. Stein, "Bad News Travels Slowly: Size, Analyst Coverage, and the Profitability of Momentum Strategies," J. *Finance*, vol. 55, no. 1, pp. 265-295, Feb. 2000.
- [13] W. H. Beaver, "The Information Content of Annual Earnings Announcements," J. Account. Res., vol. 6, pp. 67-92, 1968.
- [14] R. Ball and P. Brown, "An Empirical Evaluation of Accounting Income Numbers," J. Account. Res., vol. 6, no. 2, pp. 159-178, 1968.
- [15] O. Kim and R. E. Verrecchia, "Trading Volume and Price Reactions to Public Announcements," J. Account. Res., vol. 29, no. 2, pp. 302-321, 1991.
- [16] S. Dellavigna and J. M. Pollet, "Investor Inattention and Friday Earnings Announcements," J. Finance, vol. 64, no. 2, pp. 709-749, Apr. 2009.
- [17] S. C. Myers and N. S. Majluf, "Corporate financing and investment decisions when firms have information that investors do not have," *J. financ. econ.*, vol. 13, no. 2, pp. 187-221, Oct. 1984.
- [18] G. A. Akerlof, "The Market for Lemons: Quality Uncertainty and the Market Mechanism.," Q. J. Econ., vol. 84, 1970.
- [19] J. Wang, "A Model of Competitive Stock Trading Volume," J. Political Econ., vol. 102, no. 1, pp. 127-168, Feb. 1994.
- [20] T. J. Linsmeier, D. B. Thornton, M. Venkatachalam, and M. Welker, "The Effect of Mandated Market Risk Disclosures on Trading Volume Sensitivity to Interest Rate, Exchange Rate, and Commodity Price Movements," *Account. Rev.*, vol. 77, no. 2, pp. 343-377, Apr. 2002.
- [21] T. J. George, G. Kaul, and M. Nimalendran, "Trading Volume and Transaction Costs in Specialist Markets," *J. Finance*, vol. 49, no. 4, pp. 1489-1505, Sep. 1994.



- [22] W. R. Landsman, and E. L. Maydew, "Has the Information Content of Quarterly Earnings Announcements Declined in the Past Three Decades?," J. Account. Res., vol. 40, no. 3, pp. 797-808, Jun. 2002.
- [23] T. Mahipala, H. Chan, and R. Faff, "Trading volume and information asymmetry: routine versus nonroutine earnings announcements in Australia," *Appl. Financial Econ.*, vol. 19, no. 21, pp. 1737-1752, Nov. 2009.





