Relationship between Trading Volume and Cost of Capital in Listed Companies in the Stock Exchange of Thailand

Piyawat Khamnuengsitthi[1*] ,Rojana Thammajinda[2] and Chanon Chingchayanurak[3]

[1*,2,3]Faculty of Business Administration, Chiang Mai University

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Abstract

Objective of independent study is to study the behavior of trading volume around the earning announcement and the relationship between trading volume and capital costs of companies in the Stock Exchange of Thailand. The Event Study found that during the pre-announcement, trading volume decreased by an average of 0.69% (cumulative volume decreased by an average of 3.07%) and a significant increase of 29.70% (cumulative volume increased by 38.27 percent) during the announcement date. With the greatest increment at the time T = 1 and 0, respectively. The next part, the correlation test found that the difference between the abnormal volume before and after (DIFF) was used to represent the information asymmetry. It correlates with cost of capital in the negative way. That means if the DIFF is greater, the cost of capital will be lower.

Keyword: 1) Trading Volume 2) Earning Announcement Date 3) Cost of Capital

[1*] Master Student, Master Science in Finance; E-mail: Piyawat.k@cmu.ac.th (Corresponding Author)

[2] Assistant Professor, Department of Finance; E-mail: Rojana.t@cmu.ac.th

[3] Lecturer, Department of Finance; E-mail: Chanon.ch@cmu.ac.th

Introduction

Stock trading volume is a public information for investors that is no less important than the stock price. In practice, both types of data are used by investors to determine trading decisions. The Dow Theory and Wyckoff Trading Method are two examples that rely on trading volume data to confirm the strength and trend of stock price movement. Moreover, trading volume has been examined in a number of areas, such as using trading volume as a tool to create investment strategies (Dejbordin, 2017, pp.36-37; Nagel, 2005, pp.307-308) and studying the relationship between trading volume and other variables, including price, yield, and volatility of the security (Campbell, et al., 1993, pp.905-907; Brailsford, 1996, p.106; Mahajan and Singh, 2009, pp.129-130; Chen, et al., 2001, p.171; Chandrapala, 2011, p.47).

In another group of research, trading volume is used as a proxy for information asymmetry (Chae, 2005, p.440; Bharath, et al., 2009, pp.3212-3215). In this research, we use trading volume as a proxy to examine unusual volume during important corporate announcements. There is a high tendency that information asymmetry will occur during the time of announcement, and the differences in knowledge between informed and uninformed traders are particularly visible (Kyle, 1985, pp.1315-1317; Chae, 2005, p.414; Bharath, et al., 2009, pp.3212-3215).

Companies with such information asymmetry can potentially harm their shareholder with higher agency risk and as a result generate lower expected cash flow. Therefore, rational investors are looking for higher returns to compensate such risks. In other words, we can expect both the cost of equity and cost of debt to increase. For the leveraged firms, information asymmetry can also generate a conflict of interest. Usually, the shareholder will have more information about the company than the debtholder and will likely use this information for their own benefit.

In this study, we are particularly interested in the company's cost of capital. The cost of capital is a crucial financial indicator and an internal rate of return. It also functions as a hurdle rate on a project or investment required by a company, which affects the decision to pursue or reject a specific project and the company's growth (Easley and O'Hara, 2004, p.1553). Information asymmetry is also associated with the cost of capital (Botosan, et al., 2004, p.232; Bharath, et al., 2009, p.3211; Armstrong, et al., 2011, p.37; Myers and Majluf, 1984, pp.187-189). Research by Lambert and Verrecchia (2009, p.25), Barakat, et al. (2014, pp.5-6), and Levi and Zhang (2015, pp.354-357) break down the components of the cost of capital in shareholders' perspective into the following factors: 1) Market Risk 2) Liquidity Risk 3) Adverse Selection Risk 4) Information Risk. When the information becomes asymmetrical during the company's announcement due to the above components, the cost of capital will also change due to the demand for a higher rate of returns from shareholders to compensate for such risks.

There has been no study of such correlations using trading volume as proxy for information asymmetry in Thailand. Most previous literature in Thailand and abroad use

corporate governance and corporate social responsibility as main variables to examine the cost of capital.

In addition, trading volume is an interesting variable in many aspects, namely, 1) Response to a disclosure of information (especially financial data) better than price variables 2) Response to information asymmetry well and more effective than price variable, and 3) Provide thorough public disclosure testing (Beaver, 1968, p.68; Cready and Hurtt, 2002, pp.906-907; Bamber, et al., 2011, pp.462-463). In conclusion, this study will investigate the relationship between stock trading volume, a proxy for information asymmetry, and the cost of capital using trading volume in the same style as Chae (2005, p.419).

Literature Review

The Study of Relationship Between Trading Volume and Cost of Capital

The previous related research by Bharath, et al. (2009, p.3211) discover that information asymmetry is an imminent variable to determine the firm's capital structure and the cost of capital. Armstrong, et al. (2011, p.37) additionally test the influence of information asymmetry on the firm's cost of capital using five variables. The result exhibits that the information asymmetry is positively correlated to the company's cost of capital (higher level of asymmetry, higher cost of capital). They further elaborate that the level of market competition also influences the relationship differently. There are many more research that confirms the relationship between information asymmetry and the cost of capital (Botosan, et al., 2004, p.232; Bharath, et al., 2009, p.3211; Armstrong, et al., 2011, p.37; Myers and Majluf, 1984, pp.187-189).

The Study of Using Trading Volume as a Proxy for Information Asymmetry

Many variables can be applied as a proxy for information asymmetry, trading volume is also frequently selected. Kyle (1985) observes that there is a link between trading volume and the information asymmetry of the informed and uninformed traders. Since the informed will likely take advantage of the information. Chae (2005, p.440) concludes that trading volume can be used as a proxy for information asymmetry and has a negative correlation with the asymmetry. Additionally, Bharath, et al. (2009, p.3238) and Boujelbene and Besbes (2012, pp.7-10) explore which information asymmetry variables can identify this problem. They concluded that trading volume, return volatility, and intensity of insider trading have a positive and statistically significant effect on information asymmetry.

Study Framework

Research by Barron, et al. (2005, p.403), Bamber, et al. (2011, pp.462-463), and Basu, et al. (2013, p.250) confirms that earnings announcement affects the investors' trading behavior significantly more than other announcements. Moreover, Verrecchia (1982, p.37), Kim and Verrecchia (1994, pp.41-45), and Libby, et al. (2002, pp.452-454) also state that investors' anticipation of the company's earnings demands more inside information during the announcement to gain more benefit. We choose to study earnings announcement because it attributes to great information

asymmetry.

The dependent variable for this research is trading volume which is defined as the difference between abnormal trading volume before and after earnings announcement. First, we run an event study to capture the abnormal trading volume during the announcement. Then the data acquired from the first stage will be tested to find the association with the cost of capital using the regression analysis. The objective of this study is to examine the trading volume during the firm's earnings announcement and the relationship between trading volume and the cost of capital of listed companies in The Stock Exchange of Thailand (SET).

Methods

Hypothesis

The effects of the company's announcement can occur before, during, and after the report which is forecasted to have relatively high information symmetry. Chae (2005, p.414) explains that investors can predict the announcement date and anticipate some information disclosure on a regular announcement (proxied by earnings announcements). Hence, uninformed investors will postpone their trading since they expect that informed investors will exploit the information. In succession, the overall trading volume before the public announcement will decrease. Later, the uninformed traders will participate more robustly after the information asymmetry resolves to offset their holdback earlier. Thus, we formulate our first and second hypothesis:

Hypothesis 1: Trading Volume decreases before the earnings announcement.

Hypothesis 2: Trading Volume increases after the earning announcement.

Using abnormal trading volume as a proxy to examine information asymmetry is required which Kyle (1985, pp.1315-1317), Chae (2005, p.440), and Bharath, et al. (2009, p.3238) have previously done. Their research models confirmed that the volume of trading is a good proxy for the asymmetrical, together with the relationship between trading volume and information asymmetry. Chae (2005, pp.440-441) states theoretical model concludes that 1) a decrease in trading volume before an announcement indicates information asymmetry and 2) an increase in trading volume after an announcement indicates information asymmetry.

This study uses a variable that can identify the information asymmetry problem both before and after an announcement, which Chae (2005, p.419) defines as the difference between abnormality in trading volume before and after announcements (DIFF). It can also allude to the degree of asymmetrical information. The greater the abnormality in trading volume, the greater the information asymmetry both prior and post announcement. Adding to that, Levi and Zhang (2015, pp.369-370) state that high information asymmetry during an announcement, though temporary, can affect the firm's cost of capital.

During uneventful time, if information asymmetry occurs, it will normally trigger the cost of capital to go up as well (Lambert and Verrecchia, 2009, p.25; Barakat, et al., 2014, pp.5-6; Levi and Zhang, 2015, pp.369-370).

On the contrary, other research opinionate that publicly disclosing information such as revenue and other data voluntarily or involuntarily can decrease information asymmetry. Information asymmetry can be reduced because of 1) minimizing incentives for obtaining information with high access costs, 2) minimizing the benefit gaps from inside information between the informed and the uninformed, 3) encouraging risk sharing since traders with the same data will make same trading movement, and 4) giving stakeholders more accessibility to evaluate the company's value accurately and monitor the company's work effectively, thus reducing agency risk, agency problems, and conflict of interest (Diamond, 1985, p.1089; Kim and Verrecchia, 1994, pp.58-60; Verrecchia, 2001, pp.172-173; Easley and O'Hara, 2004, p.1578).

I concur that an announcement, whether voluntary or mandatory, can lower the magnitude of information asymmetry which leads to hypothesis 3.

Hypothesis 3: Abnormal trading volume before and after the announcement has a negative correlation with the cost of capital.

Populations and Samples

The sample in this study is comprised of 469 listed companies in The Stock Exchange of Thailand (SET) over a period of ten years (2009-2019). Companies listed as financial business are excluded since their financial statement, capital structure and method of calculating the cost of capital are vastly different from other types of industry which can affect the overall result. Companies listed for less than one year are also excluded.

Methodology

Event Study

The standard event analysis is employed to measure the effect of corporate announcement. In this study, trading volume is reflected in turnover and other details as mentioned in Chae (2005, pp.419-420). The details are as follows:

Estimation Window represents an uneventful trading period which is 40 days to 11 days before an announcement [-40, -11].

Event Window is ten days before to ten days after the announcement [-10, +10].

Trading Volume: Stock Turnover is measured by natural logarithm of trading volume divided by volume of issued stock.

$$V_{i,t} = Log\left(\frac{v_{i,t}}{s_{i,t}}\right)$$

Expected Trading Volume is calculated using the mean-adjusted model with average trading volume from estimation window as a proxy. The formula is as follows:

$$E(V_{i,t}) = \left(\frac{1}{30} * \sum_{t=-40}^{t=-11} V_{i,t}\right)$$

Abnormal Trading Volume is calculated by subtracting expected trading volume from actual trading volume. The formula is as follows:

$$AV_{i,t} = V_{i,t} - E(V_{i,t})$$

Cumulative Abnormal Volume is calculated by summing cumulative abnormal volume during t-1 and abnormal trading volume during t. The formula is as follows:

$$CAV_{i,t} = CAV_{i,t-1} + AV_{i,t}$$

Multiple Linear Regression

$$WACC_{i,t} = \beta_0 + \beta_1 DIFF_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 DE_{i,t} + \beta_4 BM_{i,t} + \beta_5 ROA_{i,t} + \beta_6 DVP_{i,t} + \beta_7 CG_{i,t} + \beta_8 AGE_{i,t} + \beta_9 ES_{i,t} + \beta_{10} D_{INDUS}$$

where $WACC_{i,t}$ is Weighted average cost of capital (%); $COE_{i,t}$ is Cost of equity (%); $COE_{i,t}$ is Cost of debt (%); $DIFF_{i,t}$ is Difference between the abnormal volume before and after; $SIZE_{i,t}$ is Company size; $DE_{i,t}$ is Debt to equity ratio (Time); $BM_{i,t}$ is Book to market ratio (Time); $ROA_{i,t}$ is Return to asset ratio (%); $DVP_{i,t}$ is Dividend payout ratio (Time); $CG_{i,t}$ is Dummy variable of corporate governance; $AGE_{i,t}$ is Company age (Year); $ES_{i,t}$ is Earning surprise (%); and D_{INDUS} is Dummy variable of industry.

Variables and Measurement

In this study, the dependent variables are two types of cost of debt, cost of equity and weighted average cost of capital (WACC). The calculations are as follows:

1) Weighted Average Cost of Capital (WACC) is calculated using cost and ratio from Bloomberg quarterly database.

$$WACC = W_d * COD + W_e * COE$$

2) Cost of Long-Term Debt (COD) data is collected from Bloomberg quarterly database using the following formula:

$$COD = \left[\left(\frac{SD}{TD} * CS * AF\right) + \left(\frac{LD}{TD} * CL * AF\right)\right] * (1 - TR)$$

3) Cost of Equity (COE) data is collected from Bloomberg quarterly database using the following formula:

$$COE = R_f + [\beta * CRP]$$

Independent Variables is a difference between abnormal trading volume pre and post announcement (DIFF), a method developed by Chae (2005) using the following formula:

$$Diff_{i,t} = |Min - Max|$$

Control Variables

1) Company Size (SIZE) calculated by natural logarithm of market capitalization

2) Debt-to-Equity Ratio (DE)

$$\frac{Total\ Debt}{Total\ Equity}$$

3) Book to market Ratio (BM)

$$\frac{Book\ value\ of\ equity}{Market\ value\ of\ equity}$$

4) Return on Asset (ROA)

$$\frac{Net\ profit}{Total\ asset}$$

5) Dividend Payout Ratio (DP)

$$\frac{Dividend}{Net\ Profit}$$

6) Corporate Governance Score (CG) rated by Corporate Governance Report of Thai Listed Companies (CGR) as Excellent (90-100), Very Good (80-89), and Good (70-79) which is substituted with number 1. Numbers 0 are substituted for scores less than 70.

7) Company Age (AGE) counts in year since the founding year.

8) Earnings Surprise (ES)

$$\frac{(Earning_t - Expected\ earning)}{Earning_{t-1}}$$

Table No. 1 Multiple Regression Result

	Weighted average cost of capital		
	Parameter	Std. Error	Pr > ltl
Intercept	7.1190***	0.1174	<.0001
DIFF	**-0.1145*** **	**0.0092**	**<.0001**
SIZE	0.0880***	0.0109	<.0001

	Weighted average cost of capital		
	Parameter	Std. Error	Pr > ltl
DE	-0.7220***	0.0111	<.0001
BM	0.0018	0.0016	0.247
ROA	-0.0157***	0.0021	<.0001
DVP	-0.0213*	0.0118	0.0699
CG	-0.0652**	0.0327	0.0463
AGE	-0.0099***	0.001	<.0001
ES	-0.0001*	0.0001	0.0754
Adj R-Sq		0.3676	
Standard Error		1.826	
F Value		394.7***	
Industry Fixed Effect		Yes	
Time Fixed Effect		Yes	

Note: ***,** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Results

The event study using abnormal volume as a proxy for information asymmetry reveals that negative abnormal volume happened before the announcement. This suggests lower trading activity compared to normal time, about 0.69% lower (cumulative trading goes down 3.07%). Later, the announcement date and after, there is a positive abnormal volume at t = 0.10. This finding suggests that there is a substantial increase in trading activity only during t = 0.1, about 29.70% (cumulative trading goes up 38.27%). The result of this study is consistent with hypothesis 1 and 2 and confirm that the trading volume will go down before the announcement and will rise significantly afterwards. This result provides empirical evidence that there is an information asymmetry.

In the next section, Table No. 1 presents a study of the difference in abnormal trading volume before and after announcement (DIFF) using relationship between weighted average cost of capital (WACC) and information asymmetry proxied by abnormal trading volume (AV). The result exhibits that the two variables have a negative correlation. When abnormal volume increases by one unit, cost of capital decreases by 0.1145%, confirming our third hypothesis. To elaborate, even though the level of information asymmetry is higher before the announcement, however, at the time of the event, the volume is adjusted and asymmetrical information is lessen significantly. The cost of capital (proxied for expected returns) decreases as well during the announcement. From our prediction, companies with large gaps between abnormal trading volume pre and post announcement have these characteristics: 1) small company 2) company with high cost of equity ratio 3) company in consumer product industry and service industry.

Table No. 2 Multiple Regression Result (2)

	Cost of debt			Cost of equity		
	Estimate	Std. Error	Pr > Itl	Estimate	Std. Error	Pr > Itl
Intercept	1.4750***	0.0703	<.0001	8.0070***	0.1671	<.0001
DIFF	**-0.0031**	**0.0055**	**0.5723**	**-0.2454*** **	**0.0131**	**<.0001**
SIZE	0.1361***	0.0065	<.0001	0.2606***	0.0155	<.0001
DE	0.0875***	0.0066	<.0001	0.1669***	0.0158	<.0001
BM	-0.0006	0.0009	0.5275	0.0023	0.0022	0.3036
ROA	-0.0247***	0.0013	<.0001	-0.0419***	0.003	<.0001
DVP	-0.0427***	0.007	<.0001	-0.0701***	0.0167	<.0001
CG	-0.1347***	0.0196	<.0001	0.1158**	0.0466	0.013
AGE	-0.0004	0.0006	0.4969	-0.0132***	0.0014	<.0001
ES	0.0001**	0	0.0469	-0.0002**	0.0001	0.0477
Adj R-Sq		0.2716			0.3469	
Standard Error		1.094			2.6	
F Value		253***			460***	
Industry Fixed Effect		Yes			Yes	
Time Fixed Effect		Yes			Yes	

Note: ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Further Regression Analysis Study

Table No. 2 demonstrates the regression between the cost of debt, cost of equity, and difference between abnormal trading volume before and after the announcement. The outcome shows that two variables are negatively related. The correlation with the cost of debt is not statistically significant. On the other hand, the cost of equity has a negative relationship, -0.2454% level, with 0.01 statistical significance. We believe that the results are caused by:

1. The cost of debt is calculated exclusively by financial statement, making its activity slower and lesser than that of the cost of equity. Whereas the cost of equity is calculated using beta so it can move faster and wider. This fact is observed by comparing the standard deviation of the cost of equity which is 3.22%, with the standard deviation for the cost of equity is only 1.28%.

2. The cost of equity, like trading volume, normally relates more to market information than the cost of debt which tends to follow the market interest rate.

3. These findings are consistent with Gao and Zhu (2015, p.32) which indicate that the cost of capital usually has low to no relation to information asymmetry. On the contrary, the cost of equity has a higher relationship with information asymmetry.

Table No. 3 Multiple Regression Result

	Expected	Result	Significance level
Independent Variable			
DIFF	-	-	***
Control			
SIZE	-	+	***
DE	+	-	***
BM	+	+	N/A
ROA	+	-	***
DVP	-	-	*
CG	-	-	**
AGE	-	-	***
ES	-	-	*

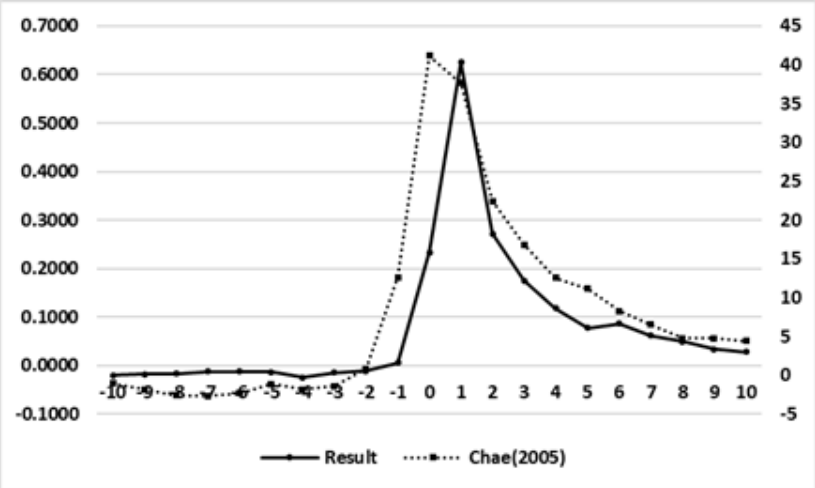
Note: ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Discussion

Table No. 3 shows the expected correlation direction and regression analysis. It can be interpreted that the independent variable, the difference abnormal trading volume before and after the announcement, has a negative correlation to the weight average cost of capital which is as assumed in hypothesis 3. However, there are differences in the degree of relationships that can be attributed to the following factors:

1) Different investors characteristics. Chae (2005, p.414) hypothesizes that the investors at that time are discretionary liquidity traders (DLTs). They use discretion or reasons to make trading decisions, especially timing information. Moreover, big groups of discretionary liquidity traders, such as institutional investors still want to make transactions when the market is highly active or has many players, so their trading will have the least impact on the price (Admati and Pfleiderer, 1988, p.6). On the other hand, Armstrong, et al. (2011, p.37) and Lambert, et al. (2012, pp.21-22) inspect that the relationship between asymmetrical information and the cost of capital is significantly varied according to the degree of competition. In conclusion, the diverse characteristics of investors and the market have contributed to such differences.

2) The market structures of NYSE and SET are different in terms of numbers and investment groups, so their reactions to the announcement are distinctive. The NYSE has more companies and investors. Chae (2005, p.418) uses the U.S. market for his study which comprised of as high as 80% of institutional investors. On the other hand, SET has only 8%. As mentioned above, this group of investors are discretionary liquidity traders who give value to timing information. In this regard, the trading volume in the U.S. market is more obvious than Thailand's.



Picture No. 1 Comparing the result

3) The severity of abnormal behavior varies widely. The details are as follows:

Picture No. 1 compares the result of this research (solid line/left axis) to that research of Chae (2005, p.420) (dashed line/ right axis). Though the behaviors of abnormalities are quite similar, with negative abnormalities prior to the announcement and high positive abnormalities during the announcement, when we observe the abnormalities closer, the result from Chae (2005, p.420) shows a higher degree of abnormality in NYSE and AMEX before and after the announcement.

The following is the result of the controlled variables study: 1) Company size has a positive correlation with the dependent variable which is not as expected and inconsistent with Giner and Reverte (2006, p.192). Their research finds that the size of a company and the average cost of capital are negatively related. The bigger the company does not mean the lower the average cost of capital. This finding is coherent with Atapolpitak (2016, p.40) and Shintya (2018, p.31) that they have a positive correlation.

2) The debt-to-equity ratio (DE) has a negative correlation with the dependent variable which is not as expected. It is inconsistent with Giner and Reverte (2006, p.192) and Kulvanich (2007, pp. 66-67) research which said the higher debt-to-capital ratio can help lower the average cost of capital. On the contrary, finding the negative correlation is consistent with the research from Tannirandon (2009, pp.40-41), Zohreh and Bahman (2013, p.1552), and Nuengkumphorn (2017, p.41). Their reasonings are 1) There is a high cost of equity in the cost of capital of a firm with a low debt-to-equity ratio. On the contrary, there is a high cost of debt in the cost of capital of a firm with a high debt-to-equity ratio. 2) Companies with a high cost of debt can lower the average cost of capital since financial costs and interest can be used for tax deduction.

3) The book-to-market ratio (BM) has a positive correlation with the dependent variable but does not have statistical significance. This result is as anticipated but inconsistent to Giner and Reverte (2006, p.192) research that finds statistical significance.

4) The return on assets (ROA) is statistically significant negatively correlated with the dependent variable. The finding is unexpected and inconsistent with the ones found by Swanson and Viinanen (2006, p.17), Mohamad and Saad (2012, p.188) and Sukhahuta, et al. (2018, p.113). However, it concurs with the research of Tannirandon (2009, pp.40-41), who reasons that the return on asset can decrease the cost of capital because a company can generate a high return on assets for shareholders, is less likely to default, and has low risk. Neither the owner of the capital nor the owner of debt wants more return from such risk, so the cost of capital is lowered.

5) The dividend payout ratio (DVP) has a negative correlation with the dependent variable which is as expected. The increase in dividend payout ratio can really lower the firm's average cost of capital but does not have statistical significance. Bowman (1979, p.628) and Kulvanich (2007, pp.66-67), however, stated that it was statistically significant in their research.

6) The corporate governance score, a dummy variable, has a statistically significant negative correlation to the dependent variable. This finding is as expected and inconsistent with the work of La Porta, et al. (2000, p.23) which stated that a company with good governance or marked as Excellent (90-100 score), Very Good (80-89 score) and Good (70-79 score) by CGR, can reduce its cost of capital.

7) The company's age is negatively correlated to the dependent variable. The finding is as expected; the older companies are more prominent, so their cost of capital is significantly lower statistically. This data is consistent with the work of Garcia, et al. (2016, p.102) and Chincarini, et al. (2020, p.52).

8) The earnings surprise, the difference between the reported earnings and the expected earnings, has a negative correlation to the dependent variable as expected. It is consistent with the results from Affleck-Graves, et al. (2002, p.581), Jiang (2008, p.408), and Brown, et al. (2009, p.224). To elaborate, when a company has more actual earnings than anticipated, the cost of capital will be lowered.

Research Findings

1) The earnings announcement will impact investors' decisions starting ten days prior. The statistically significant decrease in trading volume ten days prior to the announcement signifies that some traders will stop trading and will return after the information is disclosed.

2) Medium and large firms have similar trading volume patterns, which are lower than uneventful timing. Whereas small companies have higher trading volume during the pre-event. In terms of abnormal trading behavior, big companies exhibit significantly less abnormality than medium-sized and small companies, respectively.

3) Investors postpone their trading prior to the lower than forecast quarterly earnings announcement (-), prompting the trading volume to go down before the publication day. This reflects a high level of information asymmetry. On the other hand, if the quarterly earnings are higher than forecast (+), the volume is close to normal or slightly elevated.

Following the announcement, the trading volume of these two groups increases in a similar manner. However, if we measure the margins, they are slightly greater when quarterly earnings surpass the estimation (+).

4) Companies receiving Good Corporate Governance recognition (CG Code = 1), scoring Excellent (90-100), Very Good (80-89), and Good (70-79), have lower abnormal and problematic trading volume behavior compare to companies with CG code 0 or scoring lower than 70. The difference happens before data disclosure and it is imminent and statistically significant.

5) The abnormal trading volume in the fourth quarter has the highest anomaly and the second quarter is the second highest. The fourth and second quarters share similar abnormalities that are entirely distinct from the first and third quarters.

6) The problem of information asymmetry, described through differences in abnormal trading volume before and after the announcement (DIFF), is related and affects the cost of capital in large companies more than medium-sized and small firms.

7) Information asymmetry (proxied by differences in abnormal trading volume before and after the announcement) is linked with the cost of equity in a statistically significant way. But the relation to the cost of debt is less strong.

8) Companies with the following characteristics tend to have more severe information asymmetry:

i. Small company

ii. Company with a higher cost of equity than a higher cost of debt

iii. Company in consumer goods and services industries

Benefits from This Research

1) Company listed in SET can use the results of this study as guidelines to plan and manage their funding sources by controlling public disclosure. It can help alleviate information asymmetry and lower the firm's cost of capital.

2) Investors can use this finding to determine which companies in SET have a tendency to encounter information asymmetry and plan their trading accordingly.

3) This finding can act as guidelines for SET and other regulators to adjust their rules to minimize asymmetrical information.

Research Suggestions

1) Further study on selling and buying volume can make the results clearer and can broaden the research.

2) Response to quarterly and annual earnings announcements may vary since investors might value each type of announcement differently. Further study on this subject will provide a clearer result.

3) This research examines only the effect of regular announcements, i.e., earnings announcement. Due to sample adequacy issues, irregular announcements such as merger and acquisition, stock split (Chae, 2005, p.418), operational announcements (Barakat, et al., 2014, p.7), and so on are excluded. Further investigation into comparing different types of announcements will provide clearer findings.

4) There are more advanced ways to calculate the cost of capital. One example is using an implied cost of capital which may produce a more detailed regression analysis.

5) Information in financial statement and others related to the cost of capital and information asymmetry can widen the research such as:

I. The timing and date of earnings announcement, as well as the differences between quarterly and annual announcements (Libby, et al., 2002, p.453)

II. Price volatility (Diamond and Verrecchia, 1991, p. 1348)

I. Company-specific risk, profit consistency, etc.

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