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FIRM CHARACTERISTICS AND ABNORMAL RETURNS
DURING SHARE REPURCHASES

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Abstract

The results of the above studies show that there is a positive relationship between share repurchase announcements and abnormal returns. Multiple linear regression analysis was carried out to examine the relationship between firm characteristics and abnormal returns surrounding the shares repurchase. The findings show that there is a negative relationship between debt ratio and abnormal returns, it indicates that Malaysian market responses negatively to the companies' decisions on share repurchases because share repurchases reflect more debt financing. This paper also indicated that there is a negative relationship between prior announcement returns and abnormal returns, which indicates that investors in Malaysia respond positively to the share repurchase announcements of firms when the firms have poor prior price performance. Moderated multiple regression analysis was performed in order to investigate the moderating effect of firm size on relationship between firm characteristics and abnormal returns surrounding the shares repurchase. It was concluded that firm size is a moderating variable.

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Keywords: Abnormal returns, announcements, dividend yield, firm value, return on asset, share repurchase.



1. Introduction

The practice of share repurchases has long been adopted in developed countries (Chong et al., 2015; Isa & Lee, 2014). According to Jena et al. (2016), the practice of share repurchases first started in the United States of America during 1950. Then, the share repurchases become popular in the United States of America since the beginning of 1980s (Kowerski, 2011). In 1980, the practice of share repurchases gradually spread to the UK and UK becomes the second developed country where the share repurchases become popular. The share repurchases started to become important and it is accepted worldwide since 1990s (Jena et al., 2016), such as Australia in 1989, Hong Kong in 1991, Korea and New Zealand in 1994, and Japan in 1995 (Isa & Lee, 2014).

In Malaysia, share repurchases were legally allowed on 1 September 1997 in the Kuala Lumpur Stock Exchange (KLSE), currently known as Bursa Malaysia, following the Asian financial crisis in 1997 (Isa et al., 2017). During the Asian financial crisis, the prices of stocks declined with the Kuala Lumpur Composite Index from 1012.84 points in July 1997 to 477.57 in January 1998 (Albaity & Said, 2016). The share repurchases were allowed during the early stage of the Asian financial crisis was to enable the companies to buy back their shares and hopefully the share repurchases can stabilise the weakening market (Isa et al., 2017). Albaity and Said (2016) explained that the company can support the share price or increase the share price by buying back its own company shares.

2. Problem Statement

The company's management or insiders usually possess more information than shareholders or outsiders. The company can use the share repurchases to signal undervaluation of the company shares or future prospects of the company to the outsiders. Therefore, share repurchases are one of methods to share private information to the investors (Jena et al., 2016).

In accordance to free cash flow hypothesis, the company's management would like to buy back its own company shares when the company has excess cash and low investment opportunities (Ong & Ng, 2018). Besides, Latif and Mohd (2013) also explained that a company distributes the excess cash flow back to its shareholders by repurchasing its own shares can actually reduce the agency cost. By repurchasing shares, the company can prevent managers over-invest in negative net present value projects, use the excess cash for personal benefits, or unnecessarily retain excess cash.

Previous studies conducted in Malaysia mainly focus on the share price reactions to share repurchase announcements and some previous studies conducted in Malaysia also examined the firm characteristics of share repurchases. For example, similar study conducted by Isa and Lee (2014) using the sample from 1st September 1997 to 31st December 2007 and another similar study conducted by Ong and Ng (2018) using sample from 1st January 2012 to 31st December 2016.

3. Research Questions

By the end of the study, the results should fulfil the questions that raised in the early stage of the research. The research questions are:

- 1) Does shares repurchase affect the abnormal returns?

- 2) Does debt ratio affect the abnormal returns surrounding the shares repurchase?
- 3) Does dividend yield affect the abnormal returns surrounding the shares repurchase?
- 4) Does earnings per share affect the abnormal returns surrounding the shares repurchase?
- 5) Does market-to-book value affect the abnormal returns surrounding the shares repurchase?
- 6) Does prior announcements return affect the abnormal returns surrounding the shares repurchase?
- 7) Does return on assets affect the abnormal returns surrounding the shares repurchase?

4. Purpose of the Study

Firstly, this present study examines the relationship between share repurchases and abnormal returns. Then, further examination is carried out to study the relationship between firm characteristics and abnormal returns surrounding the share repurchases. It is crucial to understand the firm characteristics of share repurchases because these firm characteristics of share repurchases can be factors that influencing firms engaging share repurchases and influencing the abnormal returns for share repurchases. To enrich the literature review of the share repurchases in Malaysia, this study will mainly focus on share repurchases of public listed companies in Malaysia which exercised through open market in Bursa Malaysia. Besides, this study will also examine the firm characteristics of share repurchases that mentioned in the future studies of Ong and Ng (2018) and other important factors that mentioned in previous studies. In addition, this study also examines the moderating effect of firm size on the relationship between firm characteristics and the abnormal returns.

5. Research Methods

5.1. Research design

In this study, the quantitative research method with deductive reasoning approach was based on the research questions that we aimed to answer the research questions. Data were collected and analysed. Secondary data were used in the study due to the reliability of the data. The data were obtained from various sources, such as Bursa Malaysia's website, Investing.com's website, Thomson Reuters.

5.2. Sampling

In this study, judgmental sampling technique was used. There are 13,537 of share repurchase announcements from 1st January 2013 to 31st December 2017. There is a possibility that the sample becomes undue weighting if we consider every repurchase day as an event day because some firms made frequent repurchases. Besides, many useful repurchases information will be ignored if we simply take the first repurchase of each firm as the event day. Therefore, some criteria were used to select suitable data as final sample.

Based on the data obtained from the Bursa Malaysia, the initial sample consists of 264 public listed companies that have made 13,537 share repurchases from 1st January 2013 to 31st December 2017. The initial sample was sorted and screened according to the criteria and the companies without fulfil the criteria are eliminated from the sample. Therefore, the final sample consists of 493 observations from 153 public

listed companies after fulfilling the criteria as mentioned. The final sample would be used in the analysis from years 2013 to 2017.

5.3. Data collection

In the beginning of the data collection, the information regarding the share repurchase announcement date and the public listed companies involved in share repurchases from 1st January 2013 to 31st December 2017 was collected. Then, the daily share prices and the FTSE Malaysia KLCI historical data (market prices) around the share repurchase day were collected from Yahoo Finance's website and Investing.com's website. The abnormal return of the stock for the day t was calculated based on the daily share price and the market price. The cumulative abnormal return of the stock on day t was calculated based on the abnormal return of the stock for the day t . Next, the data of the independent variables for every company were collected from Datastream. Then, the data were filtered and sorted based on the share repurchase days.

5.4. Measurement of variables

In order to examine the abnormal returns surrounding the share repurchase announcement, this study used the standard event study methodology. The day of the first immediate announcement of share repurchases was considered as the event day and it was designated as day "0" in the event period. The event window was 41 days which means 20 trading days before and after the day "0". The choice of event window was similar to the studies conducted by Zhang (2005, 2002), Isa and Lee (2014) and Ong and Ng (2018).

The daily share prices were needed to calculate the daily returns and the daily returns were calculated using the following formula:

$$R_{it} = \frac{P_{it} - P_{it-1}}{P_{it-1}} \quad (1)$$

where

R_{it} = daily return for stock i on trading day t , P_{it} = closing price for stock i on trading day t ,
 P_{it-1} = closing price for stock i on trading day $t-1$.

Daily abnormal returns were calculated using the following formula:

$$AR_{it} = R_{it} - R_{mt} \quad (2)$$

where

AR_{it} = abnormal return of stock i for day t ,
 R_{it} = actual return for stock i on day t ,
 R_{mt} = observed return of the reference market on day t .

Daily average abnormal returns, AR_t were obtained as follows:

$$AR_t = \frac{1}{n} \sum_{i=1}^n AR_{it} \quad (3)$$

where n is the number of firms on day t .

The cumulative abnormal returns, *CAR* were calculated as follows:

$$CAR = \sum_{i=-20}^{+20} AR_t \quad (4)$$

Other variables are explained in Table 01 below:

Table 01. Explanation of variables

No.	Variable	Ways to measure
1	Debt Ratio	Prior month debt to assets ratio. $DEBT = \frac{\text{Total debt}}{\text{Total assets}}$
2	Dividend Yield	Prior month dividend yield. $DYIELD = \frac{\text{Cash dividends per share}}{\text{Market value per share}}$
3	Earnings Per Share	Prior month earnings per share. $EPS = \frac{\text{Net income} - \text{Preferred dividends}}{\text{Average outstanding shares}}$
4	Market-To-Book Value	Prior month market-to-book value. $MTBV = \frac{\text{Market value of firm}}{\text{Book value of firm}}$
5	Prior Announcements return	$CAR(-20,-1)$
6	Return on Assets	Prior month return on assets. $ROA = \frac{\text{Net income}}{\text{Average total assets}}$
7	Firm Size	Logarithm previous month's market capitalization before the announcements.
8	Debt Ratio x Firm Size	Multiply debt ratio by firm size.
9	Dividend Yield x Firm Size	Multiply dividend yield by firm size.
10	Earnings Per Share x Firm Size	Multiply earnings per share by firm size.
11	Market-To-Book Value x Firm Size	Multiply market-to-book value by firm size.
12	Prior Announcement Returns x Firm Size	Multiply prior announcement returns by firm size.
13	Return on Assets x Firm Size	Multiply return on assets by firm size.

5.5. Moderating variable

Moderating variable is defined as a qualitative or quantitative variable that affects the strength of the relation between an independent variable and a dependent variable. In this study, firm size was used as a moderating variable that affects the strength of the relationship between firm characteristics and abnormal returns. The direction or magnitude of the relationship between firm characteristics and abnormal returns might change according to the firm size due to the existence of information asymmetric. Large firms usually have small information asymmetric, whereas small firms usually have large information asymmetric. Different firm sizes with different levels of information asymmetric will cause investors react differently. Investors might react positively when small firms implement share repurchases because small firms have large information asymmetric. By having the possibility that firm size causes the direction or magnitude of the relationship between firm characteristic and abnormal returns to change and by understanding the definition of moderating effect, this study hypothetically assumed that firm size has a moderation effect on the relationship between firm characteristics and abnormal returns. Therefore, the hypotheses were set to examine this moderation effect, but not the direct effect on abnormal returns.

5.6. Empirical model

The independent variables in this study were debt ratio, dividend yield, earnings per share, market-to-book value, pre-event abnormal return, and return on assets. The dependent variable in this study was abnormal returns. The regression equation is as follows:

$$CAR_{(0,1)} = \alpha_0 + \beta_1(DEBT) + \beta_2(DYIELD) + \beta_3(EPS) + \beta_4(MTBV) + \beta_5(PRE) + \beta_6(ROA) + \varepsilon$$

$CAR_{(0,1)}$ = cumulative abnormal return from days 0 to 1.

$DEBT$ = debt ratio. This variable is used as a measure of the firm's assets that are financed by debt.

$DYIELD$ = dividend yield. This variable is used as a measure of growth opportunities. High dividend yield indicates less growth opportunities (Latif & Mohd, 2013).

EPS = earnings per share. This variable can be affected by share repurchases. Investor might interpret share repurchases as an evidence of lower future earnings if the firm use share repurchases to affect the earnings per share (Latif & Mohd, 2013).

$MTBV$ = market-to-book value. This variable is used as a proxy for the general perception of market valuation. It is predicted to have negative coefficient (Isa & Lee, 2014; Ong & Ng, 2018). High $MTBV$ indicates overvaluation and low $MTBV$ indicates undervaluation.

PRE = prior announcements return. This variable is used as a proxy for undervaluation. It is predicted to have negative coefficient (Isa & Lee, 2014; Ong & Ng, 2018).

ROA = return on assets. This variable is used as a proxy for the availability of alternative investment opportunities. It is predicted to have negative coefficient. High ROA indicates the firm more likely to use cash for real investments and low ROA indicates the firm more likely to repurchase shares (Isa & Lee, 2014).

The moderating variable was firm size. The independent variables in this study were debt ratio, dividend yield, earnings per share, market-to-book value, pre-event abnormal return, and return on assets. The dependent variable in this study was abnormal returns. The regression equation is as follows:

$$CAR_{(0,1)} = \alpha_0 + \beta_1(DEBT) + \beta_2(DYIELD) + \beta_3(EPS) + \beta_4(MTBV) + \beta_5(PRE) + \beta_6(ROA) + \beta_7(FS) + \beta_8(DEBT.FS) + \beta_9(DYIELD.FS) + \beta_{10}(EPS.FS) + \beta_{11}(MTBV.FS) + \beta_{12}(PRE.FS) + \beta_{13}(ROA.FS) + \varepsilon$$

In this study, there were two different data analysis tools were used in the analysis: Microsoft Excel and IBM Statistical Package for the Social Science (SPSS). In the beginning of the study, the collected data and information were managed by using Microsoft Excel. Besides, the sorting and screening of the data as well as removing missing items were also done by using Microsoft Excel. Then, the data were transferred to SPSS for descriptive analysis, normality test and some other analyses. Other analyses include Pearson Product-Moment Correlation, multicollinearity test, Durbin-Watson statistic, heteroscedasticity test, t-test, and multiple regression analysis (George, 2011).

Before we examined the moderating effect of firm size using multiple linear regression, the independent variables were centered in order to avoid potentially high multicollinearity with the interaction terms. Centering is a method to solve high multicollinearity issue when there is an interaction effect by subtracting the mean (a constant) from each case and then compute the interaction term and estimate the model (Robinson & Schumacker, 2009).

6. Findings

6.1. Descriptive analysis

Descriptive statistic used to describe the basic feature of the data in the research. It provides a simple summary and measure of the data that used in this research. Besides that, it provides a simple large amount of data into more practical way to be present and easier to interpret the data finding.

Table 2 shows the findings of descriptive statistics. CAR (0,1) is cumulative abnormal return from day 0 to day 1 variable. CAR (0,1) from the sample of 426 observations had a mean of 0.0039 with a standard deviation of 0.0381. The CAR (0,1) had a positive mean indicating that most of the firms obtain a higher expected abnormal return from day 0 to 1. The standard deviation for CAR (0,1) was 0.0381. On average, the CAR (0,1) deviates from the mean by 0.0381.

PRE is prior announcement returns variable. It also represents the cumulative abnormal returns from day -20 to day -1 variable. The prior announcement returns variable had an average value of 0.0003 with a standard deviation of 0.0873. The prior announcement returns variable had a positive mean indicating that most of the firms obtain a higher expected abnormal return from day -20 to -1. The standard deviation for CAR (-20,20) was 0.0873. On average, this variable deviates from the mean by 0.0873.

Table 02. Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
CAR(0,1)	426	-0.2115	0.1963	0.0039	0.0381
CAR(2,20)	426	-0.1864	0.2429	0.0103	0.0663
CAR(-20,20)	426	-0.2920	0.6187	0.0145	0.1058
DEBT	426	0.0000	67.8500	19.1549	15.2985
DYIELD	426	0.0000	12.6400	2.9286	2.2710
EPS	426	-0.2710	0.5480	0.0978	0.1233
FS	426	4.2286	7.6020	5.5688	0.6485

MTBV	426	0.1300	2.0600	0.8567	0.4406
PRE	426	-0.2946	0.3684	0.0003	0.0873
ROA	426	-30.2400	27.5200	4.4422	5.2609
DEBT x FS	426	0.0000	415.0490	109.7469	93.7118
DYIELD x FS	426	0.0000	67.5279	16.5373	12.8773
EPS x FS	426	-1.4974	3.7739	0.5856	0.7636
MVTB x FS	426	0.5618	13.8290	4.8685	2.7507
PRE x FS	426	-1.5599	1.9252	0.0010	0.4664
ROA x FS	426	-142.2983	148.4546	25.5522	28.8109

Notes: CAR- Cumulative Abnormal Return; DEBT- Debt Ratio; DYIELD- Dividend Yield; EPS- Earnings Per Share; FS- Firm Size; MTBV- Market-To- Book Value; PRE- Prior Announcement Returns; ROA- Return on Assets.

6.2. Pearson correlation matrix

The correlation coefficients of cumulative abnormal return from day 2 to day 20 and cumulative abnormal return from day -20 to day 20 in Table 3 were negative 0.081 and positive 0.192 respectively and both were significant at the 5 percent level of significance. According to Zhang (2002), this indicates that there is a weak negative relationship between CAR (2,20) and CAR (0,1) and there is a weak positive relationship between CAR (-20,20) and CAR (0,1).

Based on Table 3, the correlation coefficients were negative 0.093 and negative 0.081 respectively and both were significant at the 5 percent level of significance. Therefore, debt ratio and return on assets have weak negative relationship with cumulative abnormal return from day 0 to day 1. Besides, the correlation coefficient of prior announcement returns was negative 0.142 and significant at the 1 percent level of significance. Therefore, there is weak negative relationship between prior announcement returns and cumulative abnormal return from day 0 to day.

Table 03. Pearson Correlation Matrix

	CAR(0,1)	Sig. (1-tailed)
CAR(0,1)	1.000	
CAR(2,20)	-0.081**	0.048
CAR(-20,20)	0.192***	0.000
Debt Ratio	-0.093**	0.028
Dividend Yield	-0.010	0.415
Earnings Per Share	-0.061	0.106
Firm Size	-0.081**	0.047
Market-To-Book Value	0.019	0.347
Prior Announcement Returns	-0.142***	0.002
Return on Assets	0.014	0.386

Notes ** Correlation is significant at 0.01 (2-tailed)

* Correlation is significant at 0.05 (1-tailed)

6.3. Regression analysis

Based on Table 4, the t-statistic for debt ratio variable (DEBT) was -2.069 and statistically significant at 5 percent level of significance. Therefore, there is a relationship between debt ratio and abnormal returns surrounding the share repurchase announcements. The t-statistic for dividend yield variable (DYIELD) was -0.447 and not statistically significant at 10 percent level of significance. Therefore, this indicates that there is no relationship between dividend yield and abnormal returns surrounding the share repurchase announcements.

The t-statistic for earnings per share variable (EPS) was -1.536 and not statistically significant at 10 percent level of significance. Therefore, this indicates that there is no relationship between earnings per share and abnormal returns surrounding the share repurchase announcements. The t-statistic for market-to-book value variable (MTBV) was 0.147 and not statistically significant at 10 percent level of significance. Therefore, this indicates that there is no relationship between market-to-book value and abnormal returns surrounding the share repurchase announcements.

Table 04. Linear Regression Analysis

ANOVA					
Model 1	Sum of Squares	df	Mean Square	F	Sig.
Regression	235.191	6	39.198	2.772	0.012
Residual	5925.232	419	14.141		
Total	6160.423	425			
Model 1	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.960	0.527		1.821	0.069
Debt Ratio	-0.025	0.012	-0.102	-2.069	0.039 **
Dividend Yield	-0.038	0.084	-0.022	-0.447	0.655
Earnings Per Share	-2.872	1.870	-0.093	-1.536	0.125
Market-To-Book Value	0.066	0.447	0.008	0.147	0.883
Prior Announcement Returns	-0.067	0.021	-0.153	-3.120	0.002 ***
Return on Assets	0.056	0.047	0.078	1.198	0.232

Notes: *p < .10, **p < .05, *** p < .01

Dependent Variable: CAR(0,1); Independent Variables: Debt Ratio, Dividend Yield, Earnings Per Share, Market-To-Book Value, Prior Announcement Returns, and Return on Assets.

Based on Table 5, the t-statistic for debt ratio variable (DEBT) moderated by firm size (FS) was 0.279 and not statistically significant at 10 percent level of significance. Therefore, this indicates that firm size has no significant moderating effect on the relationship between debt ratio and abnormal returns.

The t-statistic for dividend yield variable (DYIELD) moderated by firm size (FS) was 0.056 and not statistically significant at 10 percent level of significance. Therefore, this indicates that firm size has no significant moderating effect on the relationship between dividend yield and abnormal returns.

The results of the moderated multiple regression analysis show that the coefficient for interaction variable between earnings per share (EPS) and firm size (FS), and coefficient for interaction variable

between return on assets and firm size (FS) were statistically significant at 10 percent level of significance. Therefore, it can be concluded that the firm size (FS) is a moderating variable. Besides, the results also show that the t-statistic of firm size was -1.172 and not statistically significant at 10 percent level of significance. Thus, firm size has no direct effect on abnormal returns.

Table 05. Moderated Linear Regression Analysis

ANOVA					
Model 2	Sum of Squares	df	Mean Square	F	Sig.
Regression	494.543	13	38.042	2.766	0.001
Residual	5665.880	412	13.752		
Total	6160.423	425			
Model 2	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.079	0.213		0.373	0.710
Debt Ratio	-0.016	0.014	-0.066	-1.177	0.240
Dividend Yield	0.049	0.087	0.029	0.559	0.577
Earnings Per Share	-5.286	2.540	-0.171	-2.081	0.038 **
Market-To-Book Value	-0.046	0.502	-0.005	-0.092	0.926
Prior Announcement Returns	-0.053	0.023	-0.122	-2.268	0.024 **
Return on Assets	0.075	0.058	0.103	1.291	0.198
Firm Size	-0.476	0.406	-0.081	-1.172	0.242
Debt Ratio x Firm Size	0.005	0.017	0.015	0.279	0.781
Dividend Yield x Firm Size	0.007	0.133	0.003	0.056	0.956
Earnings Per Share x Firm Size	9.088	2.492	0.233	3.646	0.000 ***
Market-To-Book Value x Firm Size	0.284	0.742	0.021	0.383	0.702
Prior Announcement Returns x Firm Size	5.970	3.765	0.085	1.586	0.114
Return on Assets x Firm Size	-0.126	0.074	-0.118	-1.692	0.091 *

Notes: *p < .10, **p < .05, *** p < .01

Dependent Variable: CAR(0,1); Moderating Variable: Firm size; Independent Variables: Debt Ratio, Dividend Yield, Earnings Per Share, Market-To-Book Value, Prior Announcement Returns, and Return on Assets.

7. Conclusion

7.1. Summary

This study was conducted to examine whether share repurchase can support and inflate the share price of the company in Malaysian stock market. Besides, this study was also conducted to add value to the literature by examining the relationship between firm characteristics and abnormal returns during the share repurchases.

The main objective of the study was to examine the relationship between shares repurchase announcements and abnormal returns. The results concluded that there is a positive relationship between share repurchase announcements and abnormal returns.

The second objective of the study was to examine the relationship between firm characteristics and abnormal returns surrounding the shares repurchase. The results concluded that there is a relationship between debt ratio and abnormal returns. Besides that, there is a relationship between prior announcement returns and abnormal returns.

The third objective of the study was to investigate the moderating effect of firm size on relationship between firm characteristics and abnormal returns surrounding the shares repurchase. The results concluded that firm size is a moderating variable, but firm size has no direct relationship with the abnormal returns.

7.2. Limitation

First limitation of the study is short sample period. In this study, the sample was limited to public listed companies in Bursa Malaysia that made share repurchase announcements during a sample period from 1st January 2013 to 31st December 2017. Thus, the analysis only covered 5 years of share repurchases. Many stock market situations are not included in the study due to short sample period, such as economic recession, interest rate hike, etc.

Second limitation of the study is unavailability of data. The data and information from the years 2013 to 2017 are collected from secondary sources, such as Bursa Malaysia's website, Investing.com's website, Thomson Reuters Datastream and Yahoo Finance's website. However, some company data cannot be found, such as share price data and firm characteristics data. The companies that without the required information were excluded from the data analysis.

Third limitation of the study is the sample included all industries in Malaysia and all markets of Bursa Malaysia. Different industries and different markets of Bursa Malaysia would have different price movements and different firm characteristics. Therefore, some variables might not suitable to use in the study for certain industries and markets.

7.3. Suggestion for future research

There are several recommendations for the future research. First recommendation is use longer sample period, this would include more stock market situations and stock market events. Besides, longer sample period would have larger sample size. Results of larger sample will be more precise compared to small sample.

Second recommendation for the future research is focus on specific industry and specific market of Bursa Malaysia. For example, focus on Main Market or ACE Market of Bursa Malaysia. Future researchers can use suitable variables to explain that particular industry or market. In addition, future researchers can include more factors into the model for more comprehensive understanding about the firm characteristics of share repurchases. Then, find the best fitted regression model by using the stepwise regression.

Furthermore, future research also can consider other internal factors or external factors that have moderating effect on the relationship between the firm characteristics and abnormal returns. For example, liquidity ratios, profitability ratios, solvency ratios, efficiency ratios, market condition, market growth, inflation rate, interest rate, and disposable income.

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