# "The impact of earnings management on market liquidity"

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# THE IMPACT OF EARNINGS MANAGEMENT ON MARKET LIQUIDITY

## Abstract

This article investigates the impact of earnings management on market liquidity measured by the depth of the market. Managers have desired to provide amazing performance of companies, manage their earnings through non-discretionary accruals. Consequently, investors have trouble evaluating the stock value and misunderstanding of the market liquidity because of manipulated information.

To this aim, the fixed-effect model (FEM) is implemented to analyze the financial information of 170 listed firms on the Vietnam Stock Exchange over the period 2013–2016. The empirical results emphasized that market liquidity is influenced by earnings management that means the higher level of earnings management, the better equity liquidity. The findings provide additional insight into the determinants of stock liquidity such as earnings management, firm size, daily trading dollar volume of stock, average daily trading dollar volume of the firm, daily returns of stock, daily stock returns, average closing stock price of the firm.

## INTRODUCTION

Studying the financial reporting quality is considered the accuracy of financial statements that represented the company's operating performance and position in an accounting period. This information is useful for both internal and external users to foresee the firm's future cash flows. The financial information disclosed on the statement of profit/loss and the discretion (choice of accounting methods and estimations) employed in the recording of different revenues and expenses influences the earnings of companies. Firms conducting more discretion might be assessed as having poorer financial reporting quality, whereas accrual accounting basic mentions that revenue recognition when it earned and expense recognition occurred without consideration of cash movements. Therefore, it enables discretion in the financial statements to permit better expression of enterprise performance. The application of such discretion to manipulate disclosed results is mentioned as earnings management. Schipper (1989) informed the definition, objectives of earnings management in listed firms and showed the empirical findings that firms had intent to manipulate their financial statements before special events. Dechow, Sloan, and Sweeney (1995) explored the importance of focusing on financial performance and the relation between earnings management and financial reporting quality. The quality of financial reporting is still an attractive problem that takes consideration of many scholars, investors, and other stakeholders worldwide.

# 1. LITERATURE REVIEW

Managers may exercise earnings management for their private purposes in different special events. According to Bartov and Mohanram (2004), top-level executives wish to inflate the company's earnings to exercise large stock option awards. Riahi (2013) denotes the relationship between earnings management and market liquidity in the Tunisian market. Research has admitted the theory that investors mainly buy companies' earnings, and earnings management makes the market more liquid. Bar-Yosef and Prencipe (2013) have posited that trading volume is affected by earnings management, the higher level in earnings management, and the increased trading volume. This finding also confirmed the empirical results of Brennan and Tamarowski (2000). Choi and Byun (2018) have shown corporate social responsibility commitments have significantly affects the real activities manipulation of listed companies on the Korean securities market, whereas the relationship between corporate social responsibility and discretionary accruals is insignificant. Thus, the findings suggest that senior managers are more responsible for their earnings management. The earnings management practice of financial managers is indicated in Maswadeh (2018) empirical results while looking into the Jordanian industrial companies during 2012–2016. Six control variables include concentration ownership, institutional ownership, foreign ownership, debt ratio, and company size have been shown to have an impact on real earnings management. Therefore, policy-makers need to reform policies in order to protect outside investors.

In Vietnam, Dang, Tran, and Nguyen (2018) showed evidence that there is a relationship between financial information and companies' stock prices. The results present the significant positive relationships with stock prices and financial information of listed firms in the Vietnam Stock Exchange. Focusing on earnings management from a cross-country aspect, Leuz, Nanda, and Wysocki (2003) indicate the evidence of the impact of corporate governance on earnings management; and insiders try to protect their benefits by using earnings management.

This article examines earnings management's in-fluence on market liquidity, denoting that listed companies with higher earnings management will reflect the higher market liquidity. Dechow and Dichev (2002) explored a significant positive relationship between accrual quality and earnings persistence and underlined the important benefits of measuring accrual quality. The lower financial reporting quality might generate a large proportion of informed traders exercising the trading volume of the company that impacts the willingness of liquidity traders to such trading volume. The empirical shows the evidence that market liquidity is influenced by the earnings management activity that means the level of earnings management inflate might lead to an increase in market liquidity. Moreover, the Vietnamese context study can be of general interest for foreign investors because it is quite characteristic for the frontier financial market, whereas the protection of outside shareholders has been controversial in many countries. This research is implemented to suggest several practical recommendations for managers, investors, and policy-makers to upgrade the financial market.

# 2. METHODS

Derived from the modified Jones model (Jones, 1991) that measured discretionary accruals (DA) and non-discretionary accruals (NDA), Dechow et al. (1995) modified this model by detecting sales-based manipulations. The parameters of the model are estimated:

$$\frac{Accruals_{i,t}}{TA_{i,t-1}} = \omega_0 \frac{1}{TA_{i,t-1}} + \tag{1}$$
$$+\omega_1 \frac{\Delta SALES_{i,t}}{TA_{i,t-1}} + \varepsilon_{i,1},$$

where $Accruals_{i,t}$ is explained by current accruals for firm $i$ in year $t$, measured by the differences between non-cash current assets and non-debt current liabilities and depreciation expenses. $\Delta SALES_{i,t}$ reveals the change in sales for firm $i$ in year $t$, and $TA_{i,t-1}$ is total assets for firm $i$ from the previous year. $TA_{i,t-1}$ is used to eliminate the heteroskedasticity, and the regression coefficient is estimated for a different industry. Thus, Dechow et al. (1995) identified the non-discretionary accruals for each company are followed as:

$$NDA_{i,t} = \hat{\omega}_0 \frac{1}{TA_{i,t-1}} +$$

$$+ \hat{\omega}_1 \frac{\Delta SALES_{i,t} - \Delta TR_{i,t}}{TA_{i,t-1}}, \qquad (2)$$

where $\hat{\omega}_0$ and $\hat{\omega}_1$ present the parameters of OLS estimation in equation (1), $\Delta TR_{i,t}$ displays the change in trade receivables. Hence, the discretionary accrual is manifested as the remaining part of the accruals:

$$DA_{i,t} = \frac{Accruals_{i,t}}{TA_{i,t-1}} - NDA_{i,t}. \qquad (3)$$

Since accruals reverse over time, earnings management is determined according to the absolute value of DA.

Chung, Sheu, and Wang (2006) studied the linkage between earnings management and stock liquidity and found that companies conduct earnings management have to bear lower equity liquidity. Since companies manipulate their aggressive accounting practices, investors have to protect themselves by trying to wider bid-ask spreads.

$$PSP_i = mean \ of \ \frac{a_{it} - b_{it}}{(a_{it} + b_{it})/2}, \qquad (4)$$

where $a_{it}$ implies the intraday ask prices at time $t$ for stock $i$ and $b_{it}$ denotes the intraday bid prices at time $t$ for stock $i$. Thus, to measure the equity liquidity, the authors applied the averaged percentage spread for an individual stock. Moreover, the authors also used turnover based on the logarithm value of the average daily trading volume divided by the number of outstanding shares. Companies conduct aggressive earnings management, leading to an increase in asymmetric information costs, thus decreasing the intentional transaction of investors; the turnover is also declined.

Banerjee, Gatchev, and Spindt (2007), Datar, Naik, and Radcliffe (1998), and Brockman, Howe, and Mortal (2008) identify turnover as the majority measurement of liquidity. Turnover is identified by the trading volume every month divided by total shares outstanding. Amihud (2002) defined the stock price impact on illiquidity calculated by taking a ratio of the absolute value of daily stock returns by daily dollar volume. Likewise, the author generated a modified price impact measured by taking a ratio of the absolute value of daily stock returns by daily turnover. The turnover measured by Amihud and modified Amihud is mentioned as annual averages.

Bar-Yosef and Prencipe (2013) also point out the definition of liquidity measured by Bid_Ask (B_A) spread and trading volume. The B_A spread is formulated by the difference between the market price that investors buy a stock (bid price) and the market price that investors have the willingness to sell a stock (ask/offer price). Trading volume is formulated as:

$$Volume_{i,t} = \ln \left( \begin{matrix} Monthly \ average \\ of \ daily \ volume \end{matrix} \right)_{i,t}. \qquad (5)$$

Therefore, this study followed the methodology in Chung (2006), and Bar-Yosef and Prencipe (2013) take into account the definition of market liquidity, based on trading volume, the depth of the market. This paper's hypothesis mainly depends on the magnitude and measures earnings management, which is determined by the absolute value of DA. The measurement of market liquidity implements the variable averaged percentage spread (LIQ) that is calculated as:

$$LIQ_{i,t} = \ln \left( \begin{matrix} Monthly \ average \\ of \ daily \ volume \end{matrix} \right)_{i,t}. \qquad (6)$$

Trading volume, which is also an indicator to measure the stock liquidity, required transactions exercise time for a specific stock. The higher number of stock volume asserts a higher probability of transaction exercise.

This article implements a pattern of non-financial companies obtained in the HNX index of the Vietnam Security Exchange. The study exerts a pattern of 170 non-financial companies listed on the Vietnam Stock Exchange from 2013 to 2016. The period represents the upward trend of stock price after a long gloomy market. The authors wish to address the up-ward trend period to show a clearer picture of earnings management impacts on market liquidity. The sample is selected based on two categories: the study eliminates the financial firms because their accounting financial statements comply with separate accounting standards

that are distinct from the others; a set of available financial statements is obtained such as income statements, balance sheets, and cash-flow of statements. For any given sector, the cross-sectional measurement of earnings management collected from a database on STOCKPLUS is available to calculate all financial variables.

This study intends to show evidence on the influence of earnings management on the equity liquidity in the Vietnam Stock Exchange by using the dependent variable of security liquidity, the depth. The independent variables are designed as earnings management, scale of firm, the daily trading volume of stock, the average daily trading volume of a firm, the daily returns of stock, the standard deviation of daily stock returns, and the average closing stock price of a firm. To elaborate on the impact of earnings management on security liquidity, the research examines the following empirical regression model, controlling for the significant determinants of the volume trading:

$$LIQ_{it} = \beta_0 + \beta_1 DA_{it} + \beta_2 SIZE_{it} +$$
$$+ \beta_3 TVOL_{it} + \beta_4 LNTV_{it} + \beta_5 RETUR_{it} + \qquad (7)$$
$$+ \beta_6 VOLR_{it} + \beta_7 LNCP_{it} + \varepsilon_{it},$$

where $LIQ_{it}$ denotes the liquidity of the stocks of the firm $i$ in year $t$, during the given period, $DA_{it}$ represents the measure of earnings management of firm $i$ in year $t$, $SIZE_{it}$ identifies the size of firm $i$ in year $t$, $TVOL_{it}$ measures the mean daily trading dollar volume of stock $i$ in year $t$, $LNTV_{it}$ is the natural log of the average daily trading dollar volume of firm $i$ in year $t$, $RETUR_{it}$ denotes the mean daily returns of stock $i$ in year $t$, $VOLR_{it}$ represents the standard deviation of daily stock returns of stock $i$ in year $t$, $LNCP_{it}$ is the natural log of the average closing stock price of firm $i$ in year $t$.

Because of the high information asymmetry in frontier markets, shareholders lack sufficient resources to supervise manager activities; thus, leading to earnings management behaviors. Richardson (2000) exploited that bid-ask spreads have positively affected a firm's earnings management behavior; hence, earnings management as represent endogenously, and an instrumental variable to estimate procedure can help produce consistent estimation.

This study uses the correlation analysis method between dependent and independent variables to examine the correlation between variables and the possibility of multi-collinear phenomena. A multivariate regression method between dependent variables, market liquidity, and independent variables is employed. This study conducts a simultaneous equation model, estimating equation (7) by the fixed-effect model (FEM).

## 3. RESULTS

As shown in Table 1, the descriptive statistics have expressed both dependent and independent variables in the sample. The analysis of the liquidity interprets a relatively deep market in the Vietnam Security Exchange varies between –3.11064 and 6.16714, with an average value of 3.73851. It is higher than the data observed in other financial markets, 0.32 is represented for the Chinese market (Zhou, 2007); and 0.0904 for the Tunisian market (Riahi, Lamiri, & Arab, 2013).

The average earnings management variable over four years seems is not high, with a mean value equal to 0.38614. It seems that these enterprises do show low-level earnings management. However, the range of DA variable is relatively large from –6.69057 to 202.5849 and explains that the intensity of earnings management is very different among the companies. Some of them manipulate their financial statements magnificently, is characterized by the frontier market that is risky or illiquid one.

**Table 1.** Descriptive statistics

| Variable | Obs. | Mean | Standard deviation | Max | Min |
|---|---|---|---|---|---|
| LIQ | 680 | 3.73851 | 0.69252 | 6.16714 | –3.11064 |
| DA | 680 | 0.38614 | 7.82051 | 202.5849 | –6.69057 |
| SIZE | 680 | 9.01654 | 0.78848 | 11.17488 | 1.92685 |
| TVOL | 680 | 4.66262 | 1.00447 | 11.95582 | 1.00296 |
| LNTV | 680 | 6.51050 | 2.37642 | 12.28544 | –11.48152 |
| RETUR | 680 | 0.00041 | 0.00578 | 0.04699 | –0.11529 |
| VOLR | 680 | 0.10270 | 0.45013 | 3.66624 | 0 |
| LNCP | 680 | 2.88274 | 1.61345 | 12.1497 | –6.52549 |

The estimation of this model relied on the panel data representing two aspects: one temporal and the other separate company. Pearson correlation matrix among the variables is applied to test

**Table 2.** Pearson correlation matrix

| Variable | LIQ | DA | SIZE | TVOL | LNTV | RETUR | VOLR | LNCP |
|---|---|---|---|---|---|---|---|---|
| LIQ | 1 | – | – | – | – | – | – | – |
| DA | −0.0093 | 1 | – | – | – | – | – | – |
| SIZE | 0.2063 | 0.0054 | 1 | – | – | – | – | – |
| TVOL | 0.7418 | −0.1436 | 0.4408 | 1 | – | – | – | – |
| LNTV | 0.5873 | −0.0451 | 0.6501 | 0.8138 | 1 | – | – | – |
| RETUR | −0.0273 | −0.0129 | 0.0310 | −0.0066 | 0.0079 | 1 | – | – |
| VOLR | 0.0541 | −0.0087 | 0.0535 | 0.0509 | 0.0380 | 0.0044 | 1 | – |
| LNCP | −0.1803 | −0.0074 | 0.2870 | −0.0202 | 0.1467 | 0.0236 | −0.2847 | 1 |

whether the existence of the relationship between the independent variables and prevent the problems of multicollinearity.

Table 2 illustrates the results of the matrix of the correlation coefficient by this test. The positive (negative) coefficients show positive (negative) relationships between the independent variables. According to these results, the correlation coefficients among explanatory variables of the model were relatively low, which means that multicollinearity is not a problem in the estimated model.

**Table 3.** The multicollinearity matrix

| Variable | VIF | 1/VIF |
|---|---|---|
| DA | 4.42 | 0.22627 |
| SIZE | 3.33 | 0.29999 |
| TVOL | 1.92 | 0.52019 |
| LNTV | 1.27 | 0.78954 |
| RETUR | 1.11 | 0.89804 |
| VOLR | 1.04 | 0.96098 |
| LNCP | 1.00 | 0.99806 |
| Mean VIF | 2.01 | |

Pooled OLS regression has been taken into consideration to evaluate the relationship between the independent variables and dependent variables. Nevertheless, pooled OLS regression is a basic regression model; the empirical results are easy to deviate. Furthermore, this study tests the multicollinearity phenomenon by applying VIF coefficients. Every variable with a VIF value of less than 5 (the highest one is 4.42) concluded that this model did not represent the multicollinearity phenomenon (Table 3). Furthermore, while testing autocorrelation, Prob > F = 0.0000 < 5% illustrated the autocorrelation signal. Thus, the empirical results of pooled OLS were expressed ineffective. The FEM and REM are considered for estimation.

**Table 4.** Results of regression by pooled OLS, REM, and FEM

| Variable | Pooled OLS | REM | FEM |
|---|---|---|---|
| DA | 0.0087*** | 0.0698*** | 0.0042** |
| SIZE | −0.1440*** | −0.0867*** | −0.1299* |
| TVOL | 0.4916*** | 0.3857*** | 0.2333*** |
| LNTV | 0.3835*** | 0.3451*** | 0.0354*** |
| RETUR | −1.6939 | −2.5856 | −2.4843 |
| VOLR | −0.0306 | −0.0306* | −0.0593 |
| LNCP | −0.0629*** | −0.0718*** | −0.0521** |
| C | 2.6275 | 2.6797 | 3.7027 |
| $R^2$ | 0.6001 | 0.5699 | 0.5959 |
| Observations | 680 | 680 | 680 |
| Prob > F | 0.0000 | 0.0000 | 0.0000 |

*Note:* (*), (**), (***) denote for the significant level at 1%, 5%, 10%, respectively.

Table 4 shows the results of regression by pooled OLS, REM, and FEM; and found that the results of REM are similar to the results of the pooled OLS model. As a result of REM and FEM, *p*-value = 0% is smaller than the 5%; thus, it can reject the hypothesis that the models do not fit the estimation. REM and FEM explain the relationship between earnings management and market liquidity; hence, the article uses the Hausman test (1978) to examine which model represents the optimal one. The results from the Hausman test show that FEM is an optimal selection:

$$\text{chi2}(7) = (b-B)\left[(V\_b-V\_B)\wedge(-1)\right](b-B)$$
$$= 91.02$$
$$\text{Prob} > \text{chi2} = 0.0000$$
$$(V\_b-V\_B \text{ is not positive definite})$$

## 4. DISCUSSION

In Table 4, the empirical results show a significant positive relationship between the discretionary ac-

crual variable and the depth. This result highlights that the security liquidity is decreased by earnings management behavior of listed firms. Leuz et al. (2003), Bar-Yosef and Prencipe (2013), and Riahi et al. (2013) have shown the evidence that when investors buy the stock of a company, it means that they buy the company's earnings. Internal managers for various objectives sometimes manipulate companies' earnings; thus, it creates risk for investors. The finding is in line with the detection of the Riahi et al. (2013) when focusing on manipulating financial statements in the Tunis Stock Exchange. There is a negative impact of the discretionary accruals on the spread; however, the relationship between the discretionary accruals and the depth is positive. Notwithstanding, this result is different from the result of Chung and al. (2009), which emphasized that aggressive earnings management raises the issue of information asymmetry and declines stock liquidity. Whereas Habib, Hossain, and Jiang (2009) represent that all investors seem to be more confident with firms generate stable earnings, especially institutional investors have tended to eliminate companies that inflate their earnings to reduce risks. That is the reason why institutional investors prefer investing in stable earnings companies.

Moreover, the empirical results notice the larger firm size by 1% of total assets; market liquidity will decrease the percentage volume by 12.9 basis points. Looking into the firm size, Amihud (2002) and Riahi et al. (2013) do not find out any relationship between the firm size and liquidity of the market. The control variable of firm size has been found statistically significant with a negative value. This result has underlined that a big-size company is necessarily ineffective. Many large enterprises continuously reduce their earnings through reinvesting in many new fields without understanding the new situation or having enough experience.

As can be seen from Table 4, the daily dollar trading volume of security has a positive effect on the trading volume of security significantly at 1% level. The increase in the volume of trading is derived from the enhancing spread caused by the rising of intervention conducted by the informed traders. Thus, this process tends to decrease information asymmetry in the security market. Moreover, the volume of trading concerns the issues of adverse choice since the informed investors wish to trade large volumes to take the benefits of the information asymmetry. The findings of Chung (2009) and Riahi et al. (2013) detected the same positive significant results of this variable.

The firm's average daily trading dollar volume points out the positive impacts on the depth of the security market significantly; the finding is consistent with the evidence of Atkins and Dyl (1997). The authors focused on the firms listed on NYSE and NASDAQ and emphasized that the average daily trading dollar volume of firms did not influence the bid-ask spread but influenced the depth of these markets. However, Riahi et al. (2013) have not found the significant influence of this variable on the depth.

There was no statistical evidence of the relationship between the daily returns of security and the trading volume, the depth of the listed firms in this study. The same as daily returns of security variable, the daily returns of security represents no impact on the equity liquidity.

The variable of the closing stock price has a negative and significant signal on the threshold of 5% for the depth of the market. In other words, the increase in the price of security leads to the narrower the relative spread, the lower market liquidity. This result has been mentioned by the empirical results of Attig, Fong, Gadhoum, and Lang (2006), Chung (2009), Riahi et al. (2013).

## CONCLUSION

Using a pattern of Vietnamese firms listed on security stock exchange, this article examines earnings management's influence on equity liquidity measured by the depth of the market.

First, the findings provide additional insight into the determinants of stock liquidity, such as earnings management, firm size, daily trading dollar volume of stock, average daily trading dollar volume of the firm, the daily returns of stock; daily stock returns, average closing stock price of the firm. Therefore,

the shifts of these independent variables may make changes in the stock market's depth in the context of Vietnam and have not been mentioned in previous research.

Second, the finding suggests that market liquidity is influenced by earnings management behavior that means the level of earnings management inflate might lead to a growth in market liquidity. Furthermore, these empirical results highlight the issues of the frontier market: the investors are normally attracted by the earnings of companies and tend to exercise these earnings. Consequently, short-term speculators look into this opportunity to seek a quick and high return and do not address earnings management's degree. Nevertheless, long-term investors emphasized the conservatism of earning quality, which declared financial statements before making decisions.

Third, the finding recommends policy-makers to issue the regulations to encourage the listed companies to intensify their voluntary disclosures. Moreover, the regulations concerned monitoring financial statement quality and declaration of financial information of public companies need to be stricter. Regulators may issue a stricter penalty policy related to the non-disclosure of the compulsory information to protect the investors.

## AUTHOR CONTRIBUTIONS

Conceptualization: Do Thi Van Trang.
Data curation: Do Thi Van Trang.
Formal analysis: Do Thi Van Trang.
Funding acquisition: Do Thi Van Trang, Dinh Hong Linh.
Investigation: Do Thi Van Trang.
Methodology: Do Thi Van Trang, Dinh Hong Linh.
Project administration: Dinh Hong Linh.
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Supervision: Do Thi Van Trang, Dinh Hong Linh.
Validation: Dinh Hong Linh.
Writing – original draft: Do Thi Van Trang.
Writing – review & editing: Do Thi Van Trang, Dinh Hong Linh.

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