**Environmental Disclosure and Stock Market Liquidity of Public Listed Firms in Malaysia**

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**Abstract**

The frequency of environmental disclosure that implemented by public listed firms worldwide had been increased. This is because disclosure of environmental information can enhance the stock market liquidity. The main purpose of this research was to investigate the relationship between environmental disclosure and the stock market liquidity of public listed firms in Bursa Malaysia in of bid-ask spread. Disclosure of environmental information was measured by using content analysis of word counts in annual reports. 456 companies were selected as the final samples in year 2016 had been investigated. The financial data were collected from Data Stream by Thomson Reuters while non-financial were gather from the annual reports. After accounting for control variables such as firm leverage, firm size and market to book ratio, the results showed that there has relationship between environment disclosure and stock market liquidity. Environmental disclosure had positive significant relationship with bid-ask spread. This suggested that high disclosure level of environmental disclosure helped the public listed firms to increase the stock market liquidity and enhance investors in making investing decision due to increase in firm’s transparency. For the future research, this paper recommend~~ed~~ to extend the study by using other variables such as trading volume and stock volatility as other measurements of stock market liquidity and apply longitudinal study.

Keywords: Environmental, disclosure, liquidity, bid ask, spread, Malaysia

1. **Introduction**

Nowadays, environmental disclosure has been emphasized by the public listed companies in foreign country as well as Malaysia. Despite the fact, disclosure of environmental information has been extensive trend in small, medium and large firm in worldwide but not all have addressed this matter in their annual report that found by Sahay (2004) and Chan and Welford (2005). There is a study from the Institute for Environmental Management which manage by accounting firm from KPMG Malaysia (Kolk, 2000) which shows results that 35 % of the world’s 250 largest corporations had issuing environmental reporting in their annual report. Malaysia is one of the countries that have experienced issues in environment throughout the development of technological and growth of economic. However, Malaysian listed firm did not have much environmental reporting practices compare to other countries as Bursa Malaysia did not regulate that the information of environmental must contain in annual report.

Environmental reporting practice in annual report is important because it can attract investor to make transaction. This is because rich informational will reduce information asymmetry and adverse selection problems which increase the willingness of investor to trade in the stock market (Leuz and Wysocki, 2008). Moreover, the increase of the stock market liquidity was due to the rich information environmental that disclosure in the annual report but will reduce in cost of capital (eg: Botosan & Plumlee, 2002, Hail, 2002, and Mohd Razali, Wong, Shaharuddin, Tak, & Ahmad Hajazi, 2017). Thus, Verrecchia (2001) examined that participating of investor in market transaction will increase the market liquidity and decreased ask-bid spreads. Not only that, investor will analyse annual report that contain environmental practice that done by firm before making investing decision (Kamatra and Kartikaningdyah, 2015).

Based on the trading hypothesis, transparency level of the companies induces transaction volume that lead to increase the stock market liquidity (Ajina et al., 2015). The companies that disclosure more environmental information will get attract investors to desire make transactions in the markets. One of the advantages of the companies that have disclosure rich information will decrease transaction cost of investors. As there are two type of transaction cost divided as explicit and implicit costs (Biais, Hillion & Foucault, 1997). The explicit cost includes fees and taxes which decreasing the operations profitability when switching for an order. So more voluntary information disclosure will reduce the information asymmetry problems and decrease the cost of transaction (Heflin et al., 2005). Hence, this increase transaction volume and also investor’s confidence to invest in the company that highly disclosure environmental information which helps them to reduce unnecessary transaction cost. It can be concluded that the high disclosure environmental information will reduce adverse selection and information asymmetry but increasing of stock liquidity (Healy and Palepu, 2001).

Prior studies on the relationship between environmental disclosure and the stock market liquidity was done by other country (Akrout and Ben Othman, 2016) but no research have been examined in Malaysia. Thus, aim of this research was to determine about the connection between disclosure of environmental information and stock market liquidity of public listed firm in Bursa Malaysia. Thus, it is crucial for determine the relationship between environmental disclosure and stock market liquidity as to reassure the essentially implement environmental disclosure in annual report.

1. **Literature Review**

Signalling theory interpret voluntary disclosure in corporate reporting (Ross, 1977). Mainly, the theory explained on the information asymmetry in the labour market that was developed by Spence (1973). The theory mostly concentrates on administration’s intention to share information and receive signals from the market, stakeholders and society. The information asymmetry which means the information was had by the company but not the investor. Thus, some companies will signal certain information to investors to show that they are superior. Moreover, it will increase the firm value and performance when there was a positive signal, whereas negative signals reduce stock price and product demand (Dionne and Ouederni, 2011). Thus, the quality of signals was associated with the performance of organization which determine the signalling cost which refers to opportunities cost.

The theory also interprets the signals’ reliability as a means of signalling honesty and indicating management’s willingness and commitment to society and stakeholders (Taj 2016 and Connelly et al.2011). Committed management tends to send positive signals that increase information reliability. This is because positive financial performance signals firms’ financial stability resulting in a share price increase (Dionne & Ouedern, 2011). So, information disclosure plays an important role in the trading process by decrease the information asymmetries among traders. Thus, stock market liquidity will be increased (Hadded, Wassim, & Nobanee 2009).

Nagar, Schoenfeld and Wellman (2017) which investigate the increased economic policy uncertainty was associated increase in firms’ bid-ask spreads and illiquidity which decreased stock liquidity especially for firms more exposed to economic policy uncertainty. Next, Schoenfeld (2017) found that the information asymmetry among traders was affected by the voluntary disclosure. Thus, voluntary disclosure enhances with the level of index fund ownership which increase in disclosure and stock liquidity. Akrouta and Othman (2015) stated that the increasing of liquidity in stock market that cause by the higher level of environmental disclosure that show in the annual report which reduced the spread between bid and ask prices. However, environmental information in MENA listed companies from polluting sector have low disclosure which indicate decreases in stock market liquidity.

In France, Ajina, Sougner and Lakhal (2015) revealed that the corporate disclosure in annual reports have positively influences the liquidity of the French market. This indicates that the increasing of trading volume due to the rich-informational environment that enhance the improve of liquidity of stock market. Besides, Loukil and Yousfi (2012) investigated there is no relationship between public and private information which indicate that public information does not reduce adverse selection problems which consistent with the signalling theory. As founded that Tunisian investors do not rely only on information disclosed in annual reports and firms’ websites to make their investment decisions. This is because information disclosure does not solve information asymmetry. Their finding is not consistent with the signalling theory but confirms the predictions of behavioral finance theory.

In Jordan, Hadded, Wassim and Nobanee (2009) found that that voluntary disclosure had significant positive relationship on the stock market liquidity of publicly traded industrial and services companies. Thus, the applicability of signalling theory in the context of the Arab financial market could supporting the result that found in this research. Moreover, Espinosa, Tapia and Trombetta (2005) revealed that disclosure have positive affect on market liquidity when control for trade size. This is because when the more the disclosure by the firm will enhance liquidity. The effect on spread and depth have statistically significant but depth not always statistically significant. The results were line with the findings of Heflin et al. (2005). Amihud (2002) illiquidity measured as another parsimonious way of reconciling the multidimensional problem in terms of spread and depth and concluded that disclosure has a positive effect on liquidity. The researcher investigated to offer more evidence on the relationship between accounting disclosure quality, market liquidity, and transaction costs. As results shows that the companies with higher quality disclosures have lower effective bid-ask spreads and lower adverse selection spread components.

Based on the above literature review, most of the studies claimed that the environmental disclosure and stock market liquidity has a positive relationship (such as Espinosa, Tapia & Trombetta, 2005; Hadded, Wassim & Nobanee, 2009; Ajina, Sougner & Lakhal, 2015), hence we hypothesized our study as follow:

|  |  |
| --- | --- |
| Hypothesis 1: | There is relationship between environmental disclosure and stock market liquidity in term of bid-ask spread. |

1. **Methodology**
   1. *Sample*

The sample that used in this research were from different sectors of public listed companies such as Property, Consumer, Technology, Trading-service, Industrial and Plantation. The resource that this study used to carry out the empirical research was secondary data. Annual report of public listed firm from Bursa Malaysia was the main resources that gather data of information of environmental disclosure. The final sample that used in the data comprised 456 companies whereby initially have 472 public listed company from seven sectors after removing non available data. The period that used was 2016 which only one-year period. The financial data of two dependent variables includes bid-ask price and control variable like firm leverage, firm size, book-to-market ratio were collected from Thomson Reuters DataStream which is a tool of macroeconomic analysis.

* 1. *Environment Disclosure*

The measurement disclosure environmental information was done by calculate the number on words that relate to the environmental that appeared in the annual report of public listed companies in Bursa Malaysia by categorize different industries. Zeghal and Ahmed (1990) used the approached that counting to word use enable to shield against the irregularities in computing the quantity of disclosure. The environmental disclosure index to be counted such as “Waste”, “Recycle”, “Environment”, “Material”, “Energy”, “Electricity”, “Reuse”, “Biodiversity”, “Water”, “Spill”, “Effluent” and “Environmental Management System” which appeared in the annual reports were scanned and calculated by using computer.

* 1. *Bid-Ask Spread (SPREAD)*

Bid-ask spreads used to measure the stock market liquidity based on the average of daily relative bid-ask spreads. This measurement was used by previous research by Ascioglu, Hegde and McDermott (2005) and Muller III and Riedl (2002). This to determine how liquidity of a particular investment. The higher the stock market liquidity will influence the lower bid-ask spread. The measurement of bid-ask spread was as follow: -

SPREAD = Ask Price – Bid Price

* 1. *Regression Model*

The multiple regression analysis was used to determine the relationship between Environmental Disclosure and stock market liquidity in term of bid-ask price (SPREAD) and control variables such as firm leverage, firm size and firm book-to market ratio. The multiple regression model was having greater flexibility as researchers were able to control the variables those were affecting the dependent variables demonstratively:

Functional form: Stock Market Liquidity = f (ED, firm leverage, firm size, firm book-to-market ratio)

Full Model：

𝑺𝑷𝑹𝑬𝑨𝑫 = 𝜶𝒊,𝒕+ 𝜷1𝑬𝑫𝒊,𝒕+ 𝜷2𝑳𝑬𝑽𝒊,𝒕 + 𝜷3𝑳𝑺𝑰𝒁𝑬𝒊,𝒕 + 𝜷4𝑩𝑻𝑴𝑲𝒊,𝒕 +𝜺𝒊,𝒕

Where: -

|  |  |  |
| --- | --- | --- |
| SPREAD | = | Bid-ask spread |
| ED | = | Environmental disclosure |
| LEV | = | Firm leverage |
| LSIZE | = | Firm Size |
| BTMK | = | Book-to market ratio |
| i | = | firms |
| t | = | time |
| ε | = | Disturbance |

1. **Results and Discussion**
   1. *Descriptive Statistics*

Table 1 presented the descriptive statistic of individual sample for all the variables of this study. The table have shown all the variable’s mean, median, maximum value, minimum value, standard deviation and the number observation that contain in this research. Stock market liquidity in the research’s dependent variables was investigated in term of bid-ask spread (SPREAD) that calculated by subtraction between the ask price and bid price of the year 2016. The Table 1 shown that the average of SPREAD of the 456 companies from range of maximum value of 1.584856 and minimum value 0.001960.

Moreover, environmental disclosure (ED) in the research was measured by using content analysis of word counts. The frequency of words that appeared in the 2016 annual report were counted. The words that used to count such as “energy”, “electricity”, “water”, “biodiversity”, “emission”, “effluent”, “waste”, “recycle”, “reuse”, “spill”, “environmental” and “environmental management system”. As a result, the mean of disclosure of environmental information was 23.48026 words which mean that average companies disclose 23 to 24 words related with environmental disclosure in the annual report. Next, firm leverage (LEV) which measured by total debt to total equity that have a mean of 42.93%. Furthermore, firm size (LSIZE) was calculated by the natural logarithm of the firm’s market capitalization that have the highest number is 25.61288 and the lowest number is 15.47376. Finally, book to market ratio that represented BTMK that is measured by division of common shareholder equity by market capitalization with a mean of 1.49 times. It was calculated by common shareholder equity to market capitalization. The BTMK ratio range was between 0.355279 to 28.34576.

Table 1: Summary of Descriptive Statistics

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variable | Mean | Min | Max | Standard Deviation |
| SPREAD | 0.036878 | 0.001960 | 1.584856 | 0.093679 |
| ED | 23.48026 | 0.000000 | 543.0000 | 51.41650 |
| LEV | 0.429362 | 0.000000 | 25.03446 | 1.264610 |
| LSIZE | 19.91009 | 15.47376 | 25.61288 | 1.623846 |
| BTMK | 1.494112 | 0.355279 | 28.34576 | 1.954840 |

* 1. *Pearson’s Correlation Coefficient Test*

Table 2 shows Pearson’s correlation among variables. In the table, the firm size (LSIZE) and environmental disclosure (ED) had positive correlation towards stock market liquidity in term of bid-ask spread (SPREAD) at 1% and 5% respectively. Regarding the only independent variable which is environmental disclosure (ED) have significant positive correlation at 1%. Lastly, only leverage (LEV) has positive correlation firm size (LSIZE) among control variables. There is no significant correlation between (LSIZE) and Book-to market ratio (BTMK).

Table 2: Pearson’s correlation

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | SPREAD | ED | LEV | LSIZE | BTMK |
| SPREAD | 1 |  |  |  |  |
| ED | 0.218375  0.0000\*\*\* | 1 |  |  |  |
| LEV | -0.023712  0.6135 | 0.029868  0.5246 | 1 |  |  |
| LSIZE | 0.093242  0.0466\*\* | 0.465533  0.0000\*\*\* | 0.119417  0.0107\* | 1 |  |
| BTMK | -0.054128  0.2487 | -0.084256  0.0723\* | -0.012065  0.7972 | 0.072743  0.1209 | 1 |

\*\*\*Correlation is significant at the 0.01 level, \*\*Correlation is significant at the 0.05 level,

& \*Correlation is significant at the 0.10 level

* 1. Multiple Regression Analysis

Table 3: Summary of Panel Data and Analysis

|  |  |
| --- | --- |
| Variable | SPREAD Model |
| Constant | 0.0329  (0.5788) |
| ED | 0.0003  (0.0000) \*\*\* |
| LEV | -0.0022  (0.5208) |
| LSIZE | -0.0001  (0.9775) |
| BTMK | -0.0017  (0.4374) |
| R-square | 0.049 |
| Adjusted r-square | 0.041 |
| F | 5.9231 |
| Anova-probability statistic | 0.0001\*\*\* |
| \*\*\*Correlation is significant at the 0.01 level | |

Table 3 indicates that the regression result of SPREAD model. According to the full model equation, the stock market liquidity (SML) in term of SPREAD is the dependent variable. the above result show that the p-value of environmental disclosure towards bid-ask spread is 0.0000 smaller than 0.01 (1% significance level). Ajina et al. (2015) indicate positive relationship between the extent of corporate disclosure and market liquidity which rich of environment information which the trading volume increased the trading volume. Not only that, corporate disclosure is viewed as a positive signal to restore confidence in the market and attract investors to trade in a transparent environment. Next, the results that found by Leuz and Verrecchia (2000) also indicate the positive relationship as shown in the sample of German firms that have adopted MS or U.S. Generally Accepted Accounting Principles (GAAP) accounting standard which is the international reporting strategy commits firms to substantially increased levels of disclosure but has no immediate tax or dividend implications. Moreover, the disclosure levels in Germany under German GAAP have been characterized as being low. For these reasons, the experimental setting of our study seems particularly suited to document the economic consequences of increased disclosure. In this study none of the control variables has any significant relationship with market liquidity.

In this study we used adjusted r-square which result lower value by excluding random control variables in non-adjusted r-square. The adjusted r-square in this study is 0.041 or 4.1% which mean the relationship of market liquidity and environmental disclosure and together with all control variables can be explain 4.1%. Other 94.9% factors that may influence the market liquidity was not include in this equation. The Anova probability statistic show significant value at 1% indicate that this model fit to explain the relationship the market liquidity in this equation.

1. **Conclusion and Implication of the Study**

The results show there is a relationship between environmental disclosure and stock market liquidity in term of bid-ask spread. The higher the stock market liquidity is due to the reduce of bid-ask spread. Thus, environmental disclosure information is very important element to increase the company’s stock market liquidity which supporting by the signalling theory. Increase environmental disclosure enhance transparency of a firm and thus increase investors’ confidence to invest in the firm. For the control variables, all the variables such as leverage, size, and market to book ratio show no significant relationship with stock market liquidity in term of bid-ask spread.

The research enables investors to identify risk and obtain opportunity. From this research, investors will have a direction to making investing decisions. As the finding of the research was showed that disclosure of environmental information was positive significantly related to stock market liquidity which is measured by bid-ask spread. This study can contribute to a better understanding for investors on how disclosure of environmental information able raise the liquidity of stock market.

Next, the research tends to help future researcher and educators to have better understanding on the factors that determine the stock market liquidity and provide with substantial information on issues in Malaysia. So, this will increase the awareness to the researchers and convey the important of having environmental behaviour. This will directly be affected public to having behaviour on environmental and more prefer environmentally friendly product. Thus, the investor will prefer to invest the company that disclosure environmental information according the behaviour of public.

1. **Limitation of Study and Recommendation of Future Research**

This study contains few limitations. Firstly, the environment disclosure in this research mainly focuses on Malaysia. Thus, the research unable to do the comparisons. Therefore, it is recommended that future research should include others emerging countries such as Thailand, Korea, Poland and China. This is because different countries might have different results for the relationship.

Next, the limitation of the ways collecting environmental disclosure information was based on words count for collecting the words that relate the environmental behaviour by the companies. The words that used includes “energy”, “electricity”, “water”, “biodiversity”, “emission”, “effluent”, “waste”, “recycle”, “reuse”, “spill”, “environmental” and “environmental management system” which only have fix words to investigate the whether the companies have doing environmental. Accordingly, future research might can use dichotomous index method to collect the information of environmental.

The third limitation of this research was there have only six sectors such as Consumer Products, Construction, Plantation, Real Estate, Industrial, Technology and Trading service sectors that listed in Bursa Malaysia. Thus, future researcher should consist whole sample of public listed companies in Bursa Malaysia or replicate this study in other contexts to expand theory for generalization. The theoretical framework also can be expanded in the context of other emerging countries rather than Malaysia.

Lastly, the only variable that represent market liquidity is bid-ask spread. Future research can be extended to using other variables that represent market liquidity such as stock volatility and number of trading. More understanding about environmental disclosure and market liquidity can be enhanced by investigating more variables which was not included in this study.

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