Journal of Theoretical and Applied Information Technology
15th March 2020. Vol.98. No 05

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

# INFORMATION RISK BEFORE AND AFTER XBRL (EXTENSIBLE BUSINESS REPORTING LANGUAGE) IMPLEMENTATION: A STUDY ON LQ45 INDEX OF INDONESIAN STOCK EXCHANGE

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**ABSTRACT**

This research is aimed to examine effect of XBRL implementation by LQ45 companies on information risk. Research samples are 108 companies listed in LQ45 index of Indonesian Stock Exchange 2013-2016. Information research is measured by event return volatility, information efficiency, change of standard deviation of daily return, and bid-ask spread. Data analysis uses common-effect regression for event return volatility, change of standard deviation of daily return, and bid-ask spread; and random-effect regression for information efficiency. The result shows that XBRL implementation by LQ 45 companies has negative effect on information risk. It indicates that XBRL implementation reduce information risk by decreasing of return volatility, standard deviation of stock return, change of standard deviation of daily stock return, and bid-ask spread. XBRL implementation is useful for improvement of information accuracy, reducing of information asymmetry, reducing of error, and allows investor to make stock investment decision rapidly, accurately, and low cost.

**Keywords:** *Information Risk, XBRL Implementation, LQ45 Index, Indonesian Stock Exchange, XBRL based Financial Reporting*

## 1. INTRODUCTION

### 1.1 Background

Information technology is involved in many fields, include in business one. Business rapidly developed since information technology is involved. Information technology has important role to create innovations in business, includes in financial reporting. Information technology is needed in financial reporting to generates rapid, accurate, transparent, and understandable report for users [1]. The users include in all business stakeholders of organization, such as shareholders, government, community, investors, business analyst, auditor, etc.

In context of public traded share companies, the issue of financial reporting always correlates with stock exchange. As stock exchange has been developed rapidly as well, needs of information and companies' reports for stakeholders are increased. The information should be provided rapidly and efficiently so that it will support rapid and efficient decision making process as well. Needs of rapid and efficient information can be achieved if the information can be provided in similar business language format [2]. Integrated solution of standardized information reporting will support business intelligence implementation and help investor to accesses information and makes decision [2]. It can be done by involving information technology. One of information technology implementation to generate information standardization is eXtensible Business Reporting Language (hereafter XBRL) based financial reporting.

XBRL is a set of format to standardize information with specific concept and can be adjusted with language that can be understood by computer [3]. XBRL is aimed to provide a standardized method to set, publish, and exchange business information, especially financial information [4]. XBRL based financial report refers to financial report with standardized format in order to make financial report of a company comparable with another in a similar industry. In 2012, development team of Indonesian Stock Exchange

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XBRL starts to develop XBRL based financial reporting, and finally, XBRL taxonomy of financial report is finish in 2014 [2]. Currently, the team still develops XBRL taxonomy of financial disclosure [2]. The taxonomy refers to information categorizing based on current financial report standard. In 2015, Indonesian Stock Exchange implements XBRL taxonomies for company entity information and financial statement information of all listed companies, exclude disclosure taxonomy [2].

Advantages of XBRL implementation are provide better, rapid, accurate, and reliable financial statement analysis; reduce manual financial statements comparison and re-input manual data; provide rapid information distribution by internet technology; and provide standardized format of financial reporting [3–5]. It shows that information technology implementation improves the information transparency and accuracy [5,6]. The advantages of XBRL show that XBRL implementation can reduce error risk of financial reporting. XBRL is expected able to increases data analysis accuracy and efficiency by eliminating manual process and providing financial information standardization with taxonomy of more detail information categorizing. XBRL taxonomy also can be described as unbiased information flows for the market that will use, integrate, and combine financial information for better investment decision making [5].

Previous studies provide some evidences of XBRL implementation as facilities of communication between stock exchange participant and of improvement of decision making quality. Study of [7] finds that XBRL is a more robust and transparent format than HTML format by decreasing error of data input process and improving access of financial data. Evidence of [5] provides that financial statement users, especially non-professional users, get benefits of information technology implementation in financial reporting, include in XBRL implementation. Study of [8] finds that XBRL implementation improves market efficiency by reducing information asymmetry and improving share liquidity. Result of [9] also shows that XBRL implementation in Japan, South Korea, and Singapore reduce information asymmetry. Improvement of accuracy, reducing of information asymmetry, and reducing of error of data input are important factors that indicate information risk decreasing for stock exchange participant, especially investors. XBRL based financial report helps investors to make fast, accurate, lower cost decision.

On the other hand, in Indonesia, studies of [10] and [11] show that there is no relationship between XBRL information with information asymmetry in Indonesian Stock Exchange. It happens because Indonesian Stock Exchange is emerging market where not all shares are actively traded and investors' decision making is not fully described well. It different with developed market; such as stock market in US [5,7,8], Japan, South Korea, and Singapore [9]; where their investors is actively trade the shares so that advantage of XBRL implementation can be seen in whole traded shares.

Previous results show that there is research gap of XBRL implementation between developed market and emerging one. Main factor that causes inconsistence previous results is market condition. Since market activity is related to information risk,

This research will examine XBRL implementation on information risk of actively traded share only in Indonesian Stock Exchange. The most actively traded share only in Indonesian Stock Exchange indexed in LQ45. LQ45 is top 45 shares that have the most liquid and active transaction. Consideration of using LQ45 is to answer the effect of XBRL implementation in emerging market such Indonesian Stock Exchange, since previous studies not discover the answer yet.

### 1.2 Research Question

Financial statement is one of the most important information for investors in stock investment decision making. XBRL is a step to generate financial statement with lower error, more comparable information because of format standardization, and provide integrated and linked calculation with other parts of financial statement. In this case, XBRL helps to reduce information risk that causes investment miss-decision because of lower information accuracy. This research is aimed to answer the question: "Is XBRL implementation by LQ45 companies has negative effect on information risk?"

## 2. LITERATURE REVIEW

### 2.1 Agency Theory

Agency theory explains the relationship between owners (principal) who delegates the authority to manager (agent) to manage the company as owner interests [12]. This relationship

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causes interest conflict between principal and agent to maximize their each own wealth. The conflict gets bigger because of information asymmetry that gives more superior position for agent to have more information about company than principal.

In the context of stock market, agency relationship is described as relationship between company's management with investor. Company's management reports the result and responsible for their business activities by financial report. Information asymmetry happens when financial report provides information with no accuracy. It leads to information risk increasing for investor to make decision. Role of information technology is important in the agency conflict, especially for investor. One of information technology for reducing the conflict is by providing XBRL based financial report. XBRL decreases information risk by providing more accurate information, reducing error of report, and providing standardized format.

### 2.2 Efficient Market Theory

Efficient stock market refers to the condition where there are no any investors, individual and institutional, will get any abnormal return. All shares prices reflect the available information. There are three forms of market efficiency, which are weak form, semi-strong form, and strong form [13]. Efficient market concept is closely related to information availability. XBRL makes financial information available in the market rapidly, accurately, and lower costly. It makes stock price changes can reflect the current information, not only previous one, and make new market balance.

### 2.3 XBRL

XBRL is an eXtensible Markup Language (XML) that especially created for business purposes [14]. Main idea of XBRL development is to solve interoperability problem between platforms and speed problem of distribution and duplication of financial information for analysis and evaluation objective [15]. XBRL can be described as markup language used to helps business activities so it can be efficient way to link the gap between systems [14].

XBRL consists of two parts, which are taxonomy and instance. XBRL taxonomy is a basic classification of financial statement elements. Taxonomy consists of definitions about how an element has to be treated in the XBRL document. XBRL instance is financial information that has been tag with syntactic of XBRK markup language [15].

XBRL is used because of the integration between information technologies with business needs. Currently, XBRL becomes a standard format in financial and business information reporting and exchange [14]. XBRL allows one system link to another different system in financial reporting. Each data, or element, in financial statement will has particular identity. It makes data more useful. Data becomes interactive because it can be aggregated and extracted rapidly, easily, and less costly. Each user also can customize the information and accesses the information in the format they wanted accurately. The function of XBRL is not only enjoyed by the company but also by the users of financial statement. XBRL creates better financial reporting model than paper based or HTML, PDF, DOC, and XLS format based. XBRL facilitates the creation of simple financial information distribution flows [14]. In company perspective, XBRL improves the speed and accuracy of data issuing. Company also can fulfill various needs of internal and external financial data users. In information users perspective, XBRL makes financial information analysis and evaluation business, as a base of decision making, can be done effectively and efficiently because financial statement is provided more timely, accurate, and transparent [14].

### 2.4 XBRL Implementation in Indonesia

Indonesian Stock Exchange develops the XBRL since 2012 and it is still going to be perfected. In Indonesia, XBRL is developed because there is problem of detail information that only available in pdf format and its appendices, problem of reporting structure that is different from one company to another, and problem of manual data validation so financial statement information cannot be used optimally [2]. Reporting method of XBRL is used to makes different reporting formats into one standardize format so it will be easier for investor to process the data. XBRL implementation also helps monitoring function of Indonesian Stock Exchange on the companies. Responsive monitoring and follow up need rapid, reliable, informative information technology. It is needed because there is increasing of listed companies in Indonesian Stock Exchange, increasing of corporate actions dynamicity and complexity, increasing of various reports and information sharing, and increasing of various securities [2,3]. In quality aspect, XBRL is needed as a function of

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

information transparency to fulfill informative and reliable information needs for market and investor, as well as a solution for difference of financial language and standard for global investor [2,3].

In 2014, Indonesian Stock Exchange finishes one of XBRL implementation, which is XBRL taxonomy [2]. Taxonomy is information classification into one certain information reporting (tagging), which is information classification of entity and financial statement elements [2]. In 2015, the taxonomy has been implemented which classifies financial statement into financial position, income statement, change of equity, and cash flow statement [2]. The taxonomy will standardizes financial reporting format from all industry sectors and sub-sectors that have been determined by the stock exchange. Taxonomy standardization of financial statement refers to (1) Indonesian Financial Accounting Standard (*Pernyataan Standar Akuntansi Keuangan*); (2) Indonesian Sharia Accounting Standard (*Pernyataan Standar Akuntansi Syariah*); (3) Stock market regulation, especially *Peraturan BAPEPAM-LK No. VIII.G.7* about regulation of financial reporting and disclosure for public company, *Peraturan BAPEPAM-LK No. VIII.G.17* about regulation of securities companies' accounting policy, *Surat Edaran BAPEPAM-LK No. SE-17/BL/2012* about regulation of financial disclosure items for all industry in stock exchange [3]. After financial statement taxonomy, Indonesian Stock Exchange has a plan to develop disclosure taxonomy, and currently it is still in discussion process [2].

### 2.5 XBRL Implementation in Indonesia

Based on efficient market concept, each investor has expectation that resulted from the use of information [16]. Information is one of dynamic components of trading in stock market [16]. In context of efficient market, information is related with share price. It is because the price is reflection of information.

The important role of information in stock trading by investor has been examined. Previous study of [17] examines how information of price-earnings ratio and price-book value are able to give signal of company's condition for investor. Study of [16] explains that information quality, seen by information risk, is able to affect stock trading volatility. Role of information quality shows that there is information risk that should be charged by investor. Information risk can be triggered by (1) risk of information timeliness, (2) risk of information error, (3) risk of financial communication [16]. In this research, XBRL implementation is a mechanism to reduce information risk from the side of risk of financial communication because information is communicated with standardized method.

Since XBRL is implemented on financial reporting, information risk occurred from impact of financial information to stock price and return changes [18]. The impact can be seen by return volatility around financial statement publication, standard deviation of stock return around financial statement publication, change of standard deviation of stock return before and after financial statement publication [18].

### 2.6 Hypotheses Development

XBRL taxonomy is useful for information quality where XBRL provides facilities to improve information accuracy. First, financial information is categorized into document entity information (DEI) and financial statement information in eight different industry formats. These eight categories increase relevance of financial information based on business activities. Industry category in XBRL taxonomy can be seen figure 1 [2,3].

*Figure 1: Financial Statement Taxonomy*

Figure 1 shows that financial reporting is adjusted based on industry of general, property, infrastructure, finance and sharia, securities, insurance, collective, and financing. There is no different format between a company's financial statement and another in a same industry. Each industry has different information classification for certain monetary value based on determined format [2]. The format is set based on reporting standard in Indonesia. Study of [19] finds XBRL implementation is better to provide information with industry classification. Information risk is reduced because information is comparable and investor can be evaluate and compare financial performance easier from a company to another in one same industry.

Second, XBRL increases financial information quality by using calculation link-base. Calculation link-base is used to connect one calculation concept with another one so consistence of monetary value that appeared in XBRL document can be check [2,20]. Example, calculation link-base will validates this follow calculation.

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

*Gross profit = Sales and revenue - Cost of sales and revenue* (1)

Calculation link-base will validates manually input gross profit and XBRL calculation based gross profit. If manually input gross profit is different with XBRL calculation based gross profit, then it will be reported as an error. Company is commanded to make revision so the next step of XBRL process can be continued. Validation of calculation link-base can be seen in figure 2 [2].

*Figure 2: Validation of calculation link-base*

Figure 2 shows that manually input gross profit is determined as "value", while XBRL calculation based gross profit is determined as "result" which come from "value x weight". Before correction manually input gross profit (determined as "value") is different with XBRL calculation based gross profit (determined as "result"). Since they are different, warning sign will show up on the left side of gross profit. On the other hand, warning sign is gone when "value" and "result" is same. It shows that XBRL is able to reduce manual calculation error and mistake, and increase financial information accuracy.

Third, XBRL can validate the formula. Formula validation solves the weakness of calculation link-base validation. Calculation link-base validation is only able to do validation in one type of financial statement [2]. Formula validation can validate between contexts and types of financial statement [2]. For example, if "cash and cash equivalent" information on statement of cash flow is different with "cash and cash equivalent" information on statement of financial position, then the program will report it as an error. Relationship of "cash and cash equivalent" information on statement of cash flow with "cash and cash equivalent" information on statement of financial position can be seen in figure 3 [2].

*Figure 3: Information Relationship between Types of Financial Statement*

Figure 3 shows that formula validation ensure monetary value of "cash and cash equivalent" between statement of cash flow and statement of financial position should be same. It indicates that XBRL adds information level of accuracy between types of financial statement, so it reduce risk of investor to receive different value of a same information from different type of financial statement.

Fourth, XBRL has a function of extracting. Investor can reduces cost and time to process financial information. Investor reduces manual input process in data analysis [3]. Investor is able to extract XBRL document directly and indirectly and use it rapidly and cheaply. Extracting result can be seen in figure 4 [3].

*Figure 4: Extracting Result*

Figure 4 shows that one of extracting result from XBRL document to Excel document. On another case, XBRL document also can be extracted to another document, such as pdf document or word document. Before XBRL implementation, financial statement is reported with each company hard/software and different level of reliability. Even though there is same accounting standard, different company has different reporting format and system. The difference makes investor is harder to compare information between companies, especially companies in a same industry. Different level of accuracy of each company also makes investor harder to compare the information. Investor is not able to compare information that is generated from well financial reporting system company (company with better information accuracy) with information that is generated from bad financial reporting system company (company with worse information accuracy). XBRL plays the important role to fill the difference of accuracy so information risk can be lower.

Study of [7] finds that XBRL is a robust and transparent format than HTML for reducing error of data input. Study of [5] finds that non-professional users of financial statement get more benefits by using XBRL. Study of [8] finds XBRL increases market efficient by reducing information asymmetry and increasing stock liquidity. Study of [21] finds XBRL reduces information process cost for investor. Good XBRL implementation generates higher financial statement quality [22–24], improve earnings prediction ability [25], improve transparency of financial statement [26], eliminate information asymmetry [27], improve information accuracy and efficiency in information processing [28]. Based on above explanation, research hypothesis is as follow.

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**Ha: XBRL implementation has negative effect on information risk**

Since information risk is occurred by market responses, this research examine the effect of XBRL financial reporting on stock price and return change [18]. Market responses can be seen by stock return volatility around financial statement publication, standard deviation of stock return around financial statement publication, and change of standard deviation of stock return before and after financial statement publication [18].

**Ha1: XBRL implementation has negative effect on stock return volatility**
**Ha2: XBRL implementation has negative effect on standard deviation of stock return**
**Ha3: XBRL implementation has negative effect on change of standard deviation of stock return**

Information asymmetry also can be occurred as information risk. It can be seen by bid-ask spread [8]. The lower the spread, the lower information asymmetry will be.

**Ha4: XBRL implementation has negative effect on bid-ask spread**

## 3. RESEARCH METHOD

### 3.1 Population and Sample

Agency Research populations are companies listed in Indonesian Stock Exchange. Sample selection use purposive sampling method. Purposive sampling method is a method to determine sample that fulfill certain criteria. The criteria are:

a) Companies listed in Indonesian Stock Exchange 2013-2016. This research use period 2013-2016 because XBRL implementation starts in 2015, so this research can compare 2 years before and 2 years after XBRL implementation.
b) Companies include in LQ45 Index 2013-2016 when financial statement is published.
c) Data is complete.

Samples are 45 companies in 4 years with total observations are 180 companies-years.

### 3.2 Data

This research needs data related to stock market, which are publication date of financial statement, stock price, market index, and number of share. Data that related to financial statement are total liabilities, total assets, and net earnings for control variables. Data are secondary data that is collected and accessed from Indonesian Stock Exchange website.

### 3.3 Research Variables

This Independent variable is XBRL implementation. In Indonesia, XBRL implementation refers to implementation period as dummy variable. Score 1 for period 2013 and 2014, and score 0 for period 2015 and 2016.

Dependent variable is information risk. Information risk occurred by impact of published information [4, 18]. First measurement is event return volatility around date of financial statement publication by estimating total absolute daily abnormal return as followed [18, 29].

$$Event\ Return\ Volatility = \sum_{t=-1}^{+1} |AR_t| \quad (2)$$

$$AR_t = RR_t - ER_t \quad (3)$$

Where $AR_t$ = Abnormal return day t, $RR_t$ = Realized return day t, $ER_t$ = Expected return day t. Event window is one day before publication until one day after publication of financial statement. Expected return is estimated by market model with ordinary least square regression of market return on stock return with estimation window t-255 until t-50 (one period of financial statement) [4]. Realized return is stock return on day t. Absolution of abnormal return is calculated based on examination of information accuracy, not based on consideration of bad news (negative abnormal return) or good news (positive abnormal return). The lower event returns volatility, the lower information risk will be [4].

Second measurement of information risk is information efficiency. Information efficiency refers to the gap between stock price before information received and stock price after information received [4]. This research measure information efficiency from absolute value of deviation between realized return and expected return, while expected return also estimated by market model [18,29].

$$Information\ Efficiency = \left| \prod_{t-1}^{+1} (1 + AR_t) - 1 \right| \quad (4)$$

Lower information efficiency shows superior position of information users [4].

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

Third measurement of information risk is standard deviation of daily stock return before and after financial statement publication. It shows information usage between market participants [30]. The more informative financial information, the lower cash flow uncertainty from stock investment and the lower return volatility will be [4]. It will be measured by change of standard deviation of daily stock 30 days before and after financial statement publication [4].

Change of standard deviation of daily stock return = Standard deviation of daily stock return$_{t+30}$ - Standard deviation of daily stock return$_{t-30}$ (5)

Positive value of change of standard deviation indicates that there is increasing of information asymmetry after financial statement publication date [4]. It is different with event return volatility and information efficiency that occur information risk around financial statement publication date, change of standard deviation of daily return shows information risk 30 days after financial statement publication date to capture existence of responses delaying from market participant [4].

Fourth measurement of information risk is information asymmetry. Higher information asymmetry indicates that there is increasing of risk faced by investor when they use information in decision making. Information asymmetry occurred by transaction cost, generally measured by bid-ask spread [8]. Bid-ask spread is the difference between the lowest ask price of stock with the highest bid price of stock at financial statement publication date [8]. The calculation is as follow.

*Bid-Ask Spread = (The lowest ask price$_t$ - The highest bid price$_t$) / ((The lowest ask price$_t$ + The highest bid price$_t$)/2)* (6)

The lower bid-ask spread indicates the lower information asymmetry.

Control variables are company's size, leverage, and losses indicator. Bigger companies provide wider information transparency because they have interest to maintain their competitive advantage of market power and position as well as to show their financial and human resources power [4]. This research measures company's size with natural logarithm of market capitalization [30]. Market responses related to financial risk. Higher financial risk has correlation with market power reducing to predict future performance [29]. This research measures financial risk by leverage [30]. Leverage is measured by debt to assets ratio. Financial risk also measured by losses experience as dummy variable, score 1 if net income is negative (have losses experience), score 0 if net income positive (have no losses experience) [4].

### 3.4 Analysis Method

This research use statistics analysis. First analysis is independent sample t-test analysis. Independent sample t-test analysis is aimed to examine if there is the difference of information risk before and after XBRL implementation. If independent sample t-test is significant, then there is information risk difference before and after XBRL implementation.

Second analysis is regression analysis. Regression analysis is aimed to examine if XBRL implementation has effect on information risk. Before performs the regression analysis, this research has to choose the best regression model between common effect, fixed effect, and random effect models. It is analyzed by redundant fixed effect test, hausman test, and lagrange multiplier (LM) test. Decision for model selection tests can be seen in table 1 [31,32].

*Table 1: Model Selection*

When the best model is selected, regression model is performed. Regression model is as follow.

*Information Risk = $a + b_1XBRL + b_2Size + b_3Lev + b_4Loss$* (7)

Where information risks are event return volatility, information efficiency, change of standard deviation of daily return, and bid-ask spread; XBRL is XBRL implementation period; Size is company's size; Lev is leverage, Loss is losses indicator. Hypothesis is accepted if coefficient of XBRL ($b_1$) is negative and significant.

## 4. RESULT AND DISCUSSION

### 4.1 Descriptive Statistics

*Table 2: Descriptive Statistics*

Table 2 shows that based on 108 observations, average of each information risks of event return volatility, information efficiency, change of standard deviation of daily return, and

bid-ask spread are 0.055341; 0.020278; -0.000184; 0.019806. The lowest risks of event return volatility, information efficiency, change of standard deviation of daily return, and bid-ask spread are 0.001015; 0.000153; -0.067942; 0.001271. The highest risks of event return volatility, information efficiency, change of standard deviation of daily return, and bid-ask spread are 0.397501; 0.191417; 0.038290; 0.225201.

Based on 108 observations, average size of each company is 29.86675; while the smallest company has size 24.41215 and the highest company has size 33.73021. Average leverage of each company is 52.3294% of assets are funded by debt. The lowest leverage is 0.7531% of assets funded by debt, while the highest leverage is 126.5918% of assets funded by debt.

### 4.2 Independent Sample t-test

*Table 3: Independent Sample t-test*

Table 3 shows that average of event return volatility before XBRL implementation is 0.063708, higher than average of event return volatility after XBRL implementation which is 0.046973. Average of information efficiency before XBRL implementation is 0.024171, higher than average of information efficiency after XBRL implementation which is 0.016386. Average of change of standard deviation of daily return before XBRL implementation is 0.002131, higher than average of change of standard deviation of daily return after XBRL implementation which is -0.002500. Average of bid-ask spread before XBRL implementation is 0.031751, higher than average of bid-ask spread after XBRL implementation which is 0.007862. Value of t-statistics of all information risk measurements is significant. It indicates that there is difference of information risk before and after XBRL implementation.

### 4.3 Model Selection Tests

*Table 4: Model Selection*

Table 4 shows comparison model selection between common-effect, fixed-effect, and random-effect models. It shows that common-effect model is the best model to examine event return volatility, change of standard deviation of daily return, and bid-ask spread; while random-effect model is the best model to examine information efficiency.

### 4.4 Hypotheses Test

*Table 5: Hypotheses Test*

Table 5 shows that XBRL implementation in event return volatility regression model has coefficient -0.017168 (significant in 10%). It indicates that Ha1, XBRL implementation has negative effect on stock return volatility, is accepted. XBRL implementation in information efficiency regression model has coefficient -0.008318 (significant in 5%). It indicates that Ha2, XBRL implementation has negative effect on standard deviation of stock return, is accepted. XBRL implementation in change of standard deviation of daily stock return regression model has coefficient -0.004887 (significant in 5%). It indicates that Ha3, XBRL implementation has negative effect on change of standard deviation of stock, is accepted. XBRL implementation in bid-ask spread regression model has coefficient -0.024020 (significant in 1%). It indicates that Ha4, XBRL implementation has negative effect on bid-ask spread, is accepted.

### 4.5 Alternative Test

In the main hypothesis test, common-effect model is used to examine event return volatility, change of standard deviation of daily return, and bid-ask spread; and random-effect model is used to examine information efficiency based on statistics consideration. Alternative test is aimed to test the hypotheses with other alternative analysis. Alternative analysis of this research is performs regression analysis by using industry-effect model. Rather than statistics analysis consideration for model selection, alternative of using industry-effect model is based on XBRL taxonomy and market responses consideration. XBRL taxonomy shows that financial reporting is standardized based on eight industry; which are general, property, infrastructure, finance and sharia, securities, insurance, collective, and financing. There is a possibility that investor processes financial information, at the same time, considering industry categorical based on XBRL taxonomy. XBLR taxonomy allows elements of information reported based on certain format industry. Investor considers industry categorical because reporting format standardization based on industry will improve information relevance and comparability as each industry business activities. Based on it,

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

this research compares if result of main hypothesis test is consistent with result of alternative test by considering industry specific factor. Result of alternative test can be seen in table 6.

*Table 6: Industry Effect Regression*

Table 6 shows result of industry-effect regression is consistent with main hypothesis test that XBLR implementation has negative effect on all four information risk measurement.

### 4.6 Discussion

Data analysis shows that XBRL implementation reduce information risk for companies in LQ 45 Index of Indonesian Stock Exchange by decreasing stock return volatility, standard deviation of stock return, change of standard deviation of daily stock return, and bid-ask spread. This result is consistent with evidence that found by [7], [5], [8], and [21] that shows XBRL facilitates improvement of information accuracy and comparability for investors.

XBRL taxonomy allows financial information is categorized into eight different industry formats. These eight categories increase relevance of financial information based on business activities. Information risk is reduced because information is comparable and investor can be evaluate and compare financial performance easier from a company to another in one same industry. XBRL also increases financial information quality by reducing error of data input and increase information accuracy. XBRL features of calculation link-base and formula validation solves the weakness of manual calculation of monetary value reported in financial statement. XBRL also has function of extracting to reduce cost and time to process financial information for investors. Investor reduces manual input process in data analysis Investor is able to extract XBRL document directly and indirectly and use it rapidly and cheaply. XBRL document can be extracted directly to excel document, pdf document, or word document. Investor will not adjust their analysis into what hard/software that is used by each company for financial reporting.

In one hand, the result of this research confirms previous result of XBRL implementation in active market, such as result of [7], [5], [8], and [21] that find XBRL implementation reduces information risk in stock market. On the other hand, the result of this research is contrast with studies of [10] and [11] that could not find relationship between XBRL implementation with information asymmetry in Indonesian Stock Exchange.

Since information risk is about market responses to certain information and it is related to market activity, market condition is important thing to be considered to examine the effect of XBRL implementation on information risk. This research fills the previous gap researches that show inconsistence result of XBRL implementation in emerging market with inactive stock trading and developed market with active stock trading. In emerging market, such as Indonesian Stock Exchange, research of information risk that related to market or investor responses should be examined on firm shares that actively trading, such as firms that listed in index of LQ45. In this research, consideration of firms that listed in index of LQ45 solves the previous results inconsistence that related to market condition.

## 5. CONCLUSION

Based on data analysis, XBRL implementation by LQ 45 companies has negative effect on information risk. It indicates that XBRL implementation reduce information risk by decreasing of return volatility, standard deviation of stock return, change of standard deviation of daily stock return, and bid-ask spread. XBRL implementation is useful for improvement of information accuracy, reducing of information asymmetry, reducing of manual data input error, and allows investor to make stock investment decision rapidly, accurately, and low cost.

This research has implication for companies to increase equity fund from stock market by providing high quality information based on XBRL implementation. Main implication is for Indonesian Stock Exchange, where XBRL is developed especially for reduce stock market problems and increase market monitoring. Future research can examine XBRL implementation to another factor related to information usage or stock market responses, such as stock liquidity, trading volume, investor sophistication to process XBRL based financial information, cost of equity, financial stamen quality, financial restatement, etc.

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ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

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## TABLES:

*Table 1: Model Selection*

| | Result | |
|---|---|---|
| | **Significant** | **Insignificant** |
| Redundant Fixed Effects Tests | Fixed-effect model is better than common-effect model. | Common-effect model is better than fixed-effect model. |
| Hausman Test | Fixed-effect model is better than random-effect model. | Random-effect model is better than fixed-effect model. |
| Serial Correlation LM Test | Random-effect model is better than common-effect model. | Common-effect model is better than random-effect model. |

*Table 2: Descriptive Statistics*

| | Information Risk | | | | Size | Leverage |
|---|---|---|---|---|---|---|
| | Event Return Volatility | Information Efficiency | Change of Standard Deviation of Daily Stock Return | Bid-Ask Spread | | |
| Mean | 0.055341 | 0.020278 | -0.000184 | 0.019806 | 29.86675 | 0.523294 |
| Median | 0.038095 | 0.014044 | 0.000647 | 0.007234 | 30.05003 | 0.510870 |
| Maximum | 0.397501 | 0.191417 | 0.038290 | 0.225201 | 33.73021 | 1.265918 |
| Minimum | 0.001015 | 0.000153 | -0.067942 | 0.001271 | 24.41215 | 0.007531 |
| Standard Deviation | 0.061755 | 0.025534 | 0.012891 | 0.035804 | 1.999732 | 0.248792 |
| Observations | 180 | 180 | 180 | 180 | 180 | 180 |

*Table 3: Independent Sample t-test*

| | Average of | | | |
|---|---|---|---|---|
| | Event Return Volatility | Information Efficiency | Change of Standard Deviation of Daily Stock Return | Bid-Ask Spread |
| Before XBRL Implementation (2013-2014) | 0.063708 | 0.024171 | 0.002131 | 0.031751 |
| Before XBRL Implementation (2015-2016) | 0.046973 | 0.016386 | -0.002500 | 0.007862 |
| t-statistics | 1.829757** | 2.063828** | 2.443048** | 4.736240* |
| *Significant in alpha 1%<br>**Significant in alpha 5%<br>***Significant in alpha 10% | | | | |

*Table 4: Model Selection Test*

| Result | Model Regression of | | | |
|---|---|---|---|---|
| | Event Return Volatility | Information Efficiency | Change of Standard Deviation of Daily Stock Return | Bid-Ask Spread |
| F-statistics of redundant fixed effects tests | 0.959151 (common-effect is better than fixed-effect) | 0.721596 (common-effect is better than fixed-effect) | 0.757677 (common-effect is better than fixed-effect) | 0.866173 (common-effect is better than fixed-effect) |
| Chi-Sq-statistics of hausman tests | 4.315536 (random-effect is better than fixed-effect) | 3.863279 (random-effect is better than fixed-effect) | 6.381678 (random-effect is better than fixed-effect) | 10.657226** (fixed-effect is better than random-effect) |
| t-statistics of LM tests | 0.002442 (common-effect is | 3.442109*** (random-effect is | 1.999688 (common-effect is better than | 0.218804 (common-effect |

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| | | | | |
|---|---|---|---|---|
| | better than random-effect) | better than common-effect) | random-effect) | is better than random-effect) |
| **Conclusion** | **Common-effect is the best model** | **Random-effect is the best model** | **Common-effect is the best model** | **Common-effect is the best model** |

**Significant in alpha 5%
***Significant in alpha 10%

*Table 5: Hypotheses Test*

| **Independent Variable** | **Coefficients** | | | |
|---|---|---|---|---|
| XBRL | -0.017168*** | -0.008318** | -0.004887** | -0.024020* |
| Size | -0.006061** | -0.002393** | 0.000112 | -0.000191 |
| Leverage | -0.019338 | -0.013463*** | -0.002619 | -0.004168 |
| Loss | 0.016881 | -0.001213 | -0.007906** | 0.000382 |
| Constant | 0.253386 | 0.103072 | 0.001064 | 0.039671 |
| Dependent Variable | Event Return Volatility | Information Efficiency | Change of Standard Deviation of Daily Stock Return | Bid-Ask Spread |
| F-statistics | 4.199527* | 4.043314* | 3.260395** | 5.576337* |
| Adjusted $R^2$ | 0.066727 | 0.063677 | 0.048083 | 0.092777 |

*Significant in alpha 1%
**Significant in alpha 5%
***Significant in alpha 10%

*Table 6: Industry-Effect Regression*

| **Independent Variable** | **Coefficients** | | | |
|---|---|---|---|---|
| XBRL | -0.017289*** | -0.008283** | -0.004618** | -0.024661* |
| Size | -0.006179** | -0.002382** | -1.87E-05 | 3.31E-05 |
| Leverage | -0.010387 | -0.008279 | -0.003386 | -3.18E-05 |
| Loss | 0.014952 | -0.001768 | -0.007372** | -4.88E-05 |
| Constant | 0.254153 | 0.104161 | -0.018577 | 0.022511 |
| Dependent Variable | Event Return Volatility | Information Efficiency | Change of Standard Deviation of Daily Stock Return | Bid-Ask Spread |
| F-statistics | 1.915401*** | 1.917712*** | 3.366834* | 3.153842* |
| Adjusted $R^2$ | 0.044001 | 0.044107 | 0.106347 | 0.097712 |
| Industry-Effect | Yes | Yes | Yes | Yes |

*Significant in alpha 1%
**Significant in alpha 5%
***Significant in alpha 10%

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**FIGURES:**

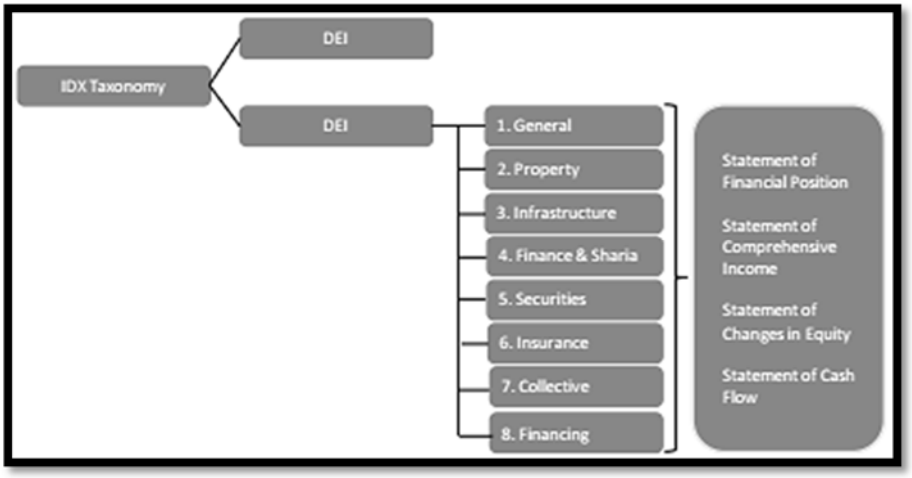


*Figure 1: Financial Statement Taxonomy*

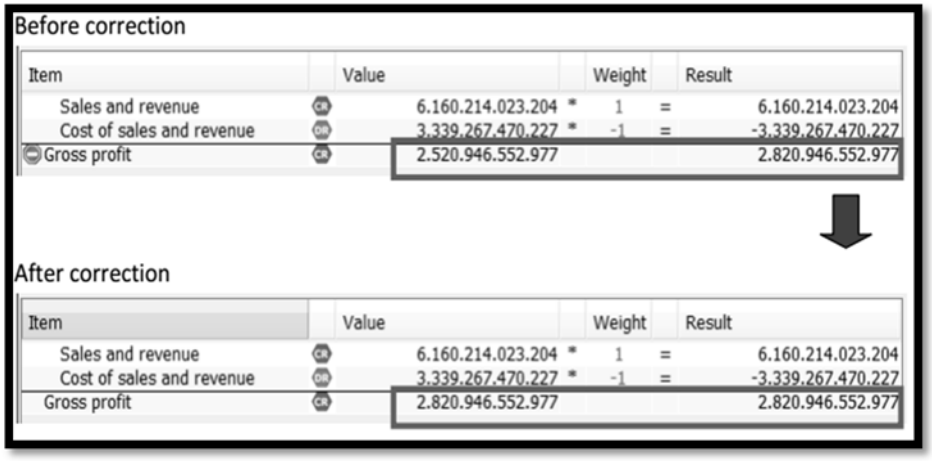


*Figure 2: Validation of calculation link-base*

Journal of Theoretical and Applied Information Technology
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ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

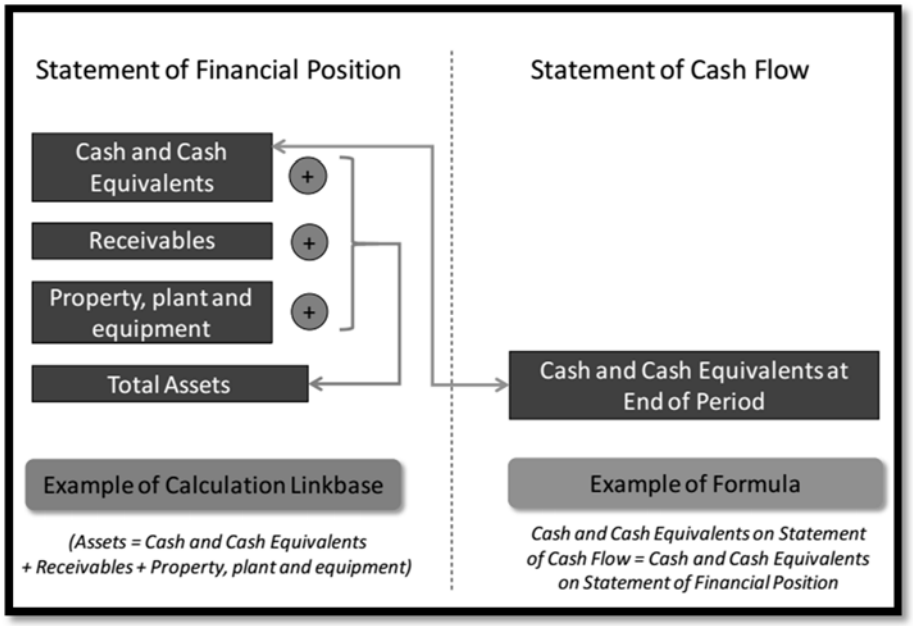


*Figure 3: Information Relationship between Types of Financial Statement*

**Direct Extract**

| | As of December 31, in Million Rupiah | | |
|---|---|---|---|
| | 2011 INTP | 2011 SMCB | 2011 SMGR |
| CurrentAsset | 10,314,573 | 2,468,172 | 7,646,145 |
| NonCurrentAsset | 7,836,758 | 8,482,329 | 12,015,458 |
| TotalAsset | 18,151,331 | 10,950,501 | 19,661,603 |
| CurrentLiabilities | 1,476,597 | 1,683,799 | 2,889,137 |
| NonCurrentLiabilities | 940,783 | 1,739,442 | 2,157,369 |
| TotalLiabilities | 2,417,380 | 3,423,241 | 5,046,506 |
| TotalEquity | 15,733,951 | 7,527,260 | 14,615,097 |

**Direct Extract and Process**

| (dalam jutaan rupiah) | | D | E | F |
|---|---|---|---|---|
| **2011** | **Average** | **INTP** | **SMCB** | **SMGR** |
| TotalLiabilities | | 2,417,380 | 3,423,241 | 5,046,506 |
| TotalEquity | | 15,733,951 | 7,527,260 | 14,615,097 |
| TotalAsset | | 18,151,331 | 10,950,501 | 19,661,603 |
| Debt/Equity (x) | 3.87 | 6.51 | 2.20 | 2.90 |
| Debt/Asset (x) | 0.23 | 0.13 | 0.31 | 0.26 |

*Figure 4: Extracting Result*