www.iiste.org

The Impact of IFRS Convergence on Accounting Information Quality and Its Influence on Information Asymmetry in Indonesia Stock Exchange

Meily Surianti Accounting Doctoral Study Program Student, Faculty of Economics and Business, Padjajaran University, Bandung, Indonesia Lecturer at Politeknik Negeri Medan, Indonesia Email of Corresponding Author : mei_soekamto@yahoo.com

ABSTRACT

This research uses 388 number of observations taken from annual financial reporting of 97 manufacturing companies listed in Indonesia Stock Exchange. Indonesia Stock Exchange is classified as emerging capital market. Data were tested using wilcoxon signed rank test, Spearman's rank correlation test, and path analysis. Result of wilcoxon signed rank test showed that there is no difference of accounting information quality in before and after full convergence of IFRS period. Spearman's rank correlation test result also indicate that the negative correlation value of the period after the full convergence of IFRS is greater than the previous period. This indicates that the quality of accounting information before the full convergence is better than the period thereafter. Both test results are in contrast to the original allegations. Results of path analysis shows that IFRS and accounting information quality significantly affect the asymmetry of information. Correlation coefficient shows that the quality of accounting information have a stronger relationship with the asymmetry of information than IFRS. Calculation error value of the model equations path analysis showed that the direct effect of IFRS on information asymmetry is equal to 16.5%, indirect influence (through the quality of accounting information) is 10.9%, so the total is 27.4%. While direct influence of accounting information quality on the information asymmetry is 49.8%.

Keywords: IFRS, Accounting Information Quality, Information Asymmetry

Acknowledgement

Thanks to Prof. Dr. Hj. Winwin Yadiati, S.E., M.S., Ak., researcher supervisor who has given a lot of input to researcher and Prof. Dr. Azhar Susanto, S.E., M.Buss. Ak., Chairman of the Doctoral Accounting Study Progra, Faculty of Economics and Business Universitas Padjajaran

1. Introduction

IFRS is still a topic of a long debate, both among academics and practitioners. Those who support stating that the outstanding success has been achieved by IFRS, as a set of comprehensive and high quality standard, with nearly 100 countries that adopt it. In addition, IFRS can convergence with standards of important non-adopters, especially the US. (Ball, 2005). Until 2005, IFRS has been applied by more than 8000 companies in 30 countries in the European Union. Until 2008, IFRS has been applied in over 80 countries in the EU, Asia, Africa, and Latin America. (Mirza, Orrell, and Holt; 2008). While those who contra put forward issues relating to 'fair value', where the IFRS financial statements could be more relevance, but at the same time also become less reliable. In addition, various research proves that the value relevance of the implementation of fair value can be assessed on the assumption that the capital markets are efficient enough to process the good information. Less reliable due to the verification procedures on the authentic proofs of the transactions can not be performed. (Ramanna and Watts, 2009; Wahlen, et.al., 2000; Benston, et.al., 2006).

A problem that will be faced by Indonesia in implementing fair value is limited sources of market information. Kurniawan (2010) reveals there are three main problems faced by Indonesia in the full adoption of IFRS. They are: (1) unpreparedness of infrastructure such as the board of financial accounting standards as financial accounting standard setter; (2) the condition of legislation that has not been synchronized with IFRS; and (3) the lack of readiness of human resources and education in Indonesia. Hadad (2013), Chairman of the board of commissioners of Financial Services Authority in Indonesia said that the challenge of the implementation of international financial reporting standards is the readiness of the actors in the implementation of the standards. According to Hadad (2013), quick review results of the FSA on the semi annually financial statements show that market participants' understanding of the IFRS-based accounting standards in Indonesia still have to be improved. Unpreparedness of the parties involved, especially investors, financial analysts and the media in addressing the impact of the decline in the value of assets and earnings recognition, may cause sentiment in the

capital markets. The next challenge is the absence of financial reporting laws. Moreover, Indonesia capital market is classified as emerging capital market.

2. Literature Review

2.1 IFRS and It Convergence to Indonesia Financial Accounting Standards

International Financial Reporting Standards (IFRS) are rules (standards) issued by the International Accounting Standards Board (IASB), an independent organization based in London. The standard is intended to be a set of rules that can be applied in financial reporting by public companies worldwide. (Ball, 2005). Since April 2001, the function of preparation of this rule is taken by the IASB, in which the rules issued by the IASB using the new label, the International Financial Reporting Standards (IFRS). IFRS still continue the previous rules, issued by the IASC. (Ball, 2005). One of the important objectives of the IASB is to develop a set of high quality global accounting standards that can be understood and increase the transparency of financial reporting in capital markets worldwide (IASB, 2010).

Compared to US GAAP, a fundamental difference of IFRS is the using of principle-based, whereas US GAAP using the rule-based. Inherent characteristics of the principle-based framework is the potential for different interpretations of the same transaction. This situation led to the emergence of possibilities and creates uncertainty and thus require extensive disclosures in the financial statements. (Forgeas, 2008).Shortridge and Mrying (2009) cites Robert Hertz, FASB chairman, explained that by using the principles-based approach, the standard starts with laying the main objective of good reporting in the area in question and then provide a reference that explains the purpose and connect it with some common examples.

The second difference is the methodological differences in assessing an accounting treatment. Under US GAAP, research focuses on literature, whereas under IFRS, the review based on patterns in fact more detail. (Forgeas, 2008). One of the benefits of the migration from US GAAP to IFRS is to use IFRS as the financial reporting standards can improve the liquidity of capital markets and reduce the cost of capital companies by providing better information to investors regarding the company's performance. (Hail, Leuz, and Wysocki, 2011). However, Hail, Leuz, and Wysocki (2011) states that these benefits can be achieved when the adoption of new standards in actual improve the quality of reporting and comparability in reporting practices worldwide.

Indonesian Accountants Association (IAI) in December 2008 to declare Indonesia's plan for convergence to International Financial Reporting Standards (IFRS) in the financial accounting standard setting. Setting accounting treatment converges with IFRS will be applicable to the preparation of the entity's financial statements beginning on or after January 1, 2012. This was decided after going through a deep assessment and review taking into account all the risks and benefits of convergence to IFRS.

IFRS convergence in Indonesia is divided into three stages, set in the time span 2008-2010. The steps are: (1) Adoption of the entire IFRS to GAAP; (2) Preparation of necessary infrastructure; and (3) evaluation and management of the impact of adoption of SFAS. The second stage is the final preparation stage, set in the period of a year, that is 2011. At this stage, the steps are: (1) Completion of preparation necessary infrastructure; and (2) Application of gradually some IAS-based IFRS. And the last stage is the stage of implementation, in 2012, with the steps: (1) The application of IFRS-based SFAS gradually; and (2) Evaluation of the impact of adoption of SFAS comprehensively. Based on the roadmap above, the full adoption of IFRS in Indonesia was in 2012.

Indonesian capital market is categorized as emerging capital markets. Emerging capital markets is capital markets are in countries categorized as emerging markets. Emerging capital markets have characteristics of concern to investors, among which are market liquidity. Emerging capital market liquidity tends to be low compared to developed capital markets. In addition, the issue of transparency, competitiveness, and corruption are problems that also a concern of investors in emerging markets. (Levich, 2010).

Another feature of the capital markets in emerging markets is the assumption that the market is inefficient, due to the number of investors that little, weak communication systems, financial information that is not enough, and most importantly, the lack of control in the dissemination of information. (Bilgrami, 1998). Capital Market Supervisory Agency and Financial Institution, (2011) in his research report, concluded that investors in Indonesia capital market has not been able to obtain sufficient information so that this can sometimes lead to errors pricing (mispricing).

2.2. IFRS and Accounting Information Quality

Accounting is a system that provides quantitative financial information about the economic entity that is useful for making economic decisions. Accounting provides a means of recording and communication business activities and results of such activities. (Albrecht, Stice, and Stice, 2011).

IASB (2010) states that the general purpose financial reporting (communication of financial information to the user) is to provide financial information that is reported about an entity that is useful for potential investors, lenders, and other creditors in making decisions about providing resources to the entity. These decisions including buying, selling or holding equity and debt instruments, and providing or settlement of loans and other forms of credit.

So that the decisions taken are accurate, then the accounting information generated should be useful accounting information, ie information that meets the needs of the user. To be useful, the accounting information (financial) is to be relevant and accurately depict what is intended to be described (faithfully represents). The usefulness of this financial information will increase, if the information is comparable, verifiable, timely, and understandable. (IASB, 2010).

Some studies using discretionary accruals and accrual quality to measure the quality of accounting information (Trainor, 2011; Hope, Thomas, and Vyas, 2013; Bhattacharya, Desai, and Venkataraman, 2013; Ferdousi, Shoorvarzy, and Verdi, 2013; Cerquera and Pereira, 2014; and Rahman, et al, 2013). While Deng (2013), Barth, et.al. (2007), Chua, Cheong, and Gould (2012) and Outa (2011) using earnings management to measure the quality of accounting information. In addition, the value relevance, time loss recognition, Reability value, feedback value, and predictive value can also be used to measure the quality of accounting information. (Kao and Wei, 2014; Deng, 2013; Barth, et.al., 2007; Chua, Cheong, and Gould, 2012; Outa, 2011; Dong Ji and Lu, 2014; Barth, et.al., 2007; Lee , Walker, and Zeng, 2013; and Barth, et.al., 2013).

Various studies have been conducted to examine the effect of the application of IFRS on the quality of accounting information. (Lee and Zeng, 2013; Deng, 2013; Xu and Lu, 2014; Barth, et.al., 2007; Kao and Wei, 2014; Chua, Cheong, and Gould, 2012; Adibah, et.al., 2013; Cormier, 2014; Horton, Serafeim, and Serafeim 2010; Cascino and Gassen, 2012; Paglietti, 2009; and Outa, 2011).

2.3. IFRS and Information Asymmetry

Information asymmetry is a condition in which the manager as insider has private information that is more than the parties outside the company (such as investors, creditors, analysts, etc.). This asymmetry of information related to information risk and is a component of the cost of capital. Watts and Zimmerman (1986) states: "Information asymmetry happen in weak form and semistrong market. In weak form market, the information set contain only past security prices and /or past trading volume. In semistrong market, the information set contains all published information at the time ". From these quotations can be concluded that in an efficient market (strong market) asymmetry of information has not occurred. Indonesia as a country that is still considered emerging market, the market has not been efficient. (Bapepam-LK, 2011).

In an environment that is rich in information, as in developed countries, the asymmetry of information between management and investors can be minimized. (Rahman et al, 2013). In such an environment, public disclosure (both of which use formal channels such as annual financial statements or other lines) plays a role as an intermediary in which management signaling private information to stakeholders, including investors.

Research aimed at proving the effect of the adoption of IFRS on information asymmetry which was commissioned by Kao and Wei (2014) who found that the adoption of IFRS has reduced the asymmetry of information. Naranjo, Saavedra, and Verdi (2013) found a significant relationship between IFRS with information asymmetry. Chatam (2005) found that the degree of compliance with IAS does not have any effect on the asymmetry of information, as well as Muller, Riedl. And Sellhorn (2011) found that IFRS lowers information asymmetry.

2.4. Accounting Information Quality and Information Asymmetry

Information asymmetry is a condition in which the manager as insider has private information that is more than the parties outside the company (such as investors, creditors, analysts, etc.). This asymmetry of information related to information risk and is a component of the cost of capital.

Several studies have found that the accounting information quality affects the asymmetry of information. Some studies included the Bhattacharya, Desai, and Venkataraman (2013), which found that significantly affects the

quality of accounting information asymmetry. Cerquira and Pereira (2014) found the quality of financial reporting affect the asymmetry of information, Rahman, et.al. (2013) find that earnings management to lower information asymmetry, Ferdousi, Shoorvarzy, and Sepehri (2012) found the effect of accrual quality of the uncertainty information, though not significant, while Purwanti and Kurniawan (2013) find that earnings management does not affect the asymmetry of information.

Based on the literature review then formulated the hypothesis:

- Ha1: $\mu_{bfre} = \mu_{aftr}$ There is difference in the quality of financial information company-year period 2010-2011 to 2012-2013. (Before and after full convergence of IFRS)
- Ha2 IFRS affects the quality of accrual, indicating the increasing of the quality of accounting information
- Ha2 IFRS affect the information asymmetry
- Ha4 Accounting information quality affect information asymmetry

3. Methodology

3.1. IFRS

Convergence of IFRS is a period in which the Capital Market Supervisory Agency and Financial Institution (Bapepam-LK) said it would streamline the convergence 18 Statement of Financial Accounting Standards (GAAP) to International Financial Reporting Standard (IFRS) on January 1, 2012 that is in line with the commitment to adjust to international regulations.

The data used in this study is four years, which will be divided into two periods, namely the period before and after the full convergence of IFRS. The period prior to full convergence is the data in 2010 and 2011, while the period after full convergence of IFRS is the data in 2012 and 2013. To test the impact of the implementation of IFRS on the quality of accounting information by performing paired sample t-test or wilcoxon signed rank test. Paired sample t-test will be used if the data distributed normally, and wilcoxon signed rank test vice versa.

Otherwise it will be tested using path analysis, which is to see the direct influence of the adoption of IFRS on accounting information quality and on information asymmetry and indirect influence of IFRS on information asymmetry. For this test, the adoption of IFRS operationalized variables using dummy variables, which were given a score of 0 for the period prior to full convergence, and a score of 1 for the period after full convergence. (Houqe, et.al., 2011; Horton, Serafeim, and Serafeim, 2013; Adibah, et.al., 2013).

3.2. Accounting Information Quality Variable

The quality of accounting information in this study was measured using the accrual quality, using the model introduced by Dechow and Dichev (2002) and later developed by Francis et al (2005). This model is also used by Core, et.al. (2008) and Bhattacharya, et.al. (2013). In addition, this study attempted to examine the quality of accounting information using the model used by Barth, et.al. (2008), which saw a correlation between accrual and cash flow.

3.2.1. Accrual Quality

Accrual quality is described by the following equation (Francis et al, 2005; Core, et. Al., 2008; and Bhattacharya, et al 2013):

TCA j,t = β 0,j + β 1,jCFOj,t-1 + β 2,jCFOj,t + β 3,jCFOj,t+1 + β 4,j Δ REVj,t+ B5,jPPEj,t + ϵ j,t

TCA = $(\Delta CA - \Delta Cash) - (\Delta CL - \Delta STDEBT); \Delta CA$ = Changes in *Current Assets;* $\Delta CASH$ = Changes in *Cash* dan *Cash Equivalent;* ΔCL = Changes in *Current Liabilities;* STDEBT = Changes in *Short Term Debt;* CFO = *Cash Flow from Operation;* ΔREV =Changes in *Revenue;* PPE = *Property, Plant, and Equipment;* E = *Error*

Dechow and Dichev (2002) explains that CFOt-1 shows the cash flows that occur corresponding amount recognized in the profit (for example, the collection of accounts receivable), CFO, t refers to the cash flow received or paid in the same period as the cash flows are recognized in earnings, and CFOt + 1 refers to the cash is received or paid prior to income or expense recognized in income, such as cash payments for supplies.

Furthermore Dechow and Dichev (2002) stated that the quality of accrual based on assumptions, so that if there is an error should be corrected in the accrual and earnings in the future. Through this model, they argued that the estimation error and the subsequent correction of the noise that reduces the accrual, so the quality of accruals and

earnings decreased in accordance with the amount of the estimated error value. Match process between the working capital of the realization of cash flows used to measure the quality of accruals. High error value, means the difference in height between the working capital and cash realization, which means indicates a low accrual quality. The magnitude of accruals quality used is residual values regression model.

3.2.2. Correlation between accruals (ACC) and cash flow (CF)

Barth, et. al. (2008) and Lang et al (2003) using the correlation accruals and cash flows for measuring the quality of accounting information. Correlations were tested using spearman's rank correlation between accrual and cash flow. Lang et al. (2003) concluded that the companies were doing income smoothing is shown with a greater negative correlation between accruals and cash flows, due to the accrual reverse over time and generally negatively related to cash flow. The amount obtained by subtracting CF accrual of NI. Regression model equation is as follows (Lang, et. Al., 2003):

$$\begin{split} \text{CFi,t} &= \alpha 0 + \alpha 1 \text{SIZEi,t} + \alpha 2 \text{GROWTHi,t} + \alpha 3 \text{EISSUEi,t} + \alpha 4 \text{LEVi,t} + \\ & \alpha 5 \text{DISSUEi,t} + \epsilon \text{i,t} \\ \text{ACCi,t} &= \alpha 0 + \alpha 1 \text{SIZEi,t} + \alpha 2 \text{GROWTHi,t} + \alpha 3 \text{EISSUEi,t} + \alpha 4 \text{LEVi,t} + \end{split}$$

 α 5DISSUEi,t + ϵ i,t

SIZE : natural logarithm year-end market value of equity; GROWTH : The annual change in sales; EISSUE : The annual change in the common stock; LEV : liabilities divided by equity book value end of the year; DISSUE : The annual change in liabilities; CF : Net operating cash flow / total assets; ACC: NI – CF;N : net income/total asset

3.3. Information Asymmetry Variable

Asymmetry of information measured using the bid-ask spread, ie the difference between the stock price desired by the buyer (bid price) at a desired stock price by the seller (ask price) (Leuz and Verrecchia, 2000). Bid prices and ask prices is determined by a stock dealer as a market maker and the amount varies from one company to another, depend on the level of information asymmetry between investors who have information and investors who do not have the information. (Callahan et al, 1997).

Bid-ask spread is calculated by the following formula:

Bid Ask Spread it =
$$\frac{\text{Ask Price} - \text{Bid Price}}{[(\text{Ask Price} + \text{Bid Price}) / 2]}$$

Bid price and the ask price is used in this research is the price of the monthly trade (monthly trading) during the study period.

In addition to examine how the impact of IFRS adoption on the quality of accounting information by means of two sample paired t-test or wilcoxon signed rank test and Spearman's rank correlation, this study also want to test the effect of the adoption of IFRS (X) on the quality of accounting information (Y) and the subsequent influence on the asymmetry of information (Z). Model of the testing can be described as follows:



Structural equation for the model: $Y = py, x X + \varepsilon 1$ (1) $Z = pz, x X + pz, y Y + \varepsilon 2$ (2)

X = IFRS, using dummy variabel; Y = Accounting Information Quality, using discretionay accrual as proxy; <math>Z = Information Asymmetry, using*bid-ask spread*as proxy.

4. Result

4.1. Accounting Information Quality before and after Full Convergence of IFRS

The magnitude of accruals quality used is residual values regression model. To perform the analysis of different test, the steps are: (1) To test the normality, autocorellation, multicoliniearity, and fit of model of the multiple regression equation; (2) Entering data into the multiple regression model, to get the residual value, respectively for data of annual financial statements for 2010 and 2011 (before the full convergence of IFRS period), and the annual financial statement data for the year 2012 and 2013 (after the full convergence of IFRS period); (3) Calculate the standard deviation of multiple regression equation for the period before and after the full convergence of IFRS; and (4) Doing paired sample t-test to or wilcoxon signed rank test to see if there is an average difference is significant or not between the data before full convergence of IFRS compared to the data after the full convergence of IFRS.

To compare the quality of accounting information of companies listed in Indonesia Stock Exchange in 2010-2011 and 2012-2013 (before and after full convergence) periods used accrual quality through the residual value of the regression equation result:

 $\begin{aligned} \text{Regression model for period 2010-2011} \\ \text{TCA}_t &= -0.39 + (2.37\text{E}\text{-}13)\text{CFO}_{t\text{-}1} - (2.76\text{E}\text{-}13)\text{CFO}_t - (2.09\text{E}\text{-}13) \text{ CFO}_{t\text{+}1} + 0.078\Delta\text{REV}_t + (2.52\text{E}\text{-}14)\text{PPE}_t \\ \text{Regression model for period 2012-2013} \\ \text{TCA}_t &= 0.018 + (1.68\text{E}\text{-}13)\text{CFO}_{t\text{-}1} - (1.83\text{E}\text{-}13)\text{CFO}_t + (9.79\text{E}\text{-}13) \text{ CFO}_{t\text{+}1} - 0.502\Delta\text{REV}_t + (1.42\text{E}\text{-}14)\text{PPE}_t \end{aligned}$

presented in the following table.

Table 1 Descriptive Statistics					
		Before Full Conv		After Full Conv	
	Ν	Mean	Std. Dev	Mean	Std. Dev
Test Variable	114				
ТСА		21.27	1.68	21.74	1.44
Control Variable	114				
CFO1		21.90	1.83	21.93	1.83
CFO		21.91	1.84	22.02	1.87
CFO2		21.93	1.83	22.09	1.72
REV		22.40	1.71	22.66	1.64
PPE		23.87	1.39	24.16	1.40

The table shows that the mean test variables Total Current Accrual (TCA) before the full convergence of IFRS at 21.27, while the mean after the full convergence of 21.74, which means an increase of TCA prior to the full convergence period than the period after full convergence. Standard deviation TCA prior to the full convergence of 1.68 while after the full convergence of 1:44, which means a decline in TCA standard deviations from the average value in the period before as compared to the period after the full convergence of IFRS. This indicates that the period before the full convergence of IFRS is more volatile than the period thereafter.

Before the testing of the hypothesis, first tested the normality of the data to determine the type of test used whether parametric or nonparametric test. If the data is normally distributed then used paired sample t-test, on the contrary, if the data is not distributed normally used wilcoxon signed rank test. Here are the results of tests of normality of the data:

Table 2

One-Sample Kolmogorov-Smirnov Test			
	I S	Residual_Before	Residual_After
N	Mean	114 -,0034	114 -,1734
Normal Parameters ^{a,b}	Std. Deviation	7,03505	14,14411
Most Extreme Differences	Absolute Positive Negative	,351 ,351 -,291	,400 ,400 -,353
Kolmogorov-Smirnov Z Asymp. Sig. (2-tailed)		3,455 ,000	3,940 ,000

Kolmogorov-Smirnov Z3,4553,940Asymp. Sig. (2-tailed),000,000Based on the test results of normality (Kolmogorov-Smirnov) note that the data of accounting informationquality in the period 2010-2011 and the period 2012-2013 are not normally distributed (p-value second datagroup <0.05), then testing using a nonparametric test. The Wilcoxon signed rank test and the test results are</td>

Table 3		
Wilcoxon signed rank test Result		
Test Statistics ^a		

Residual_After - Residual_Before
-1,085 ^b 278

Based on the results of data processing such as those found in table 2 above can be seen the Z value of -1.085 with a significance value of 0.278. Furthermore, from Z-table, the error rate of 5% Z values obtained on testing the two-way 1,96. Because the absolute value of Z (1,085) is smaller than Z table (1.96) then the error rate of 5%, so that it can be concluded that there is no significance difference in the quality of accounting information before and after full convergence of IFRS period.

Error value before the full convergence of IFRS is equal to 0.680, while after the full convergence of IFRS is 0.711. High error value, means the difference in height between the working capital and cash realization, which means indicates a low accrual quality. The magnitude of accruals quality used is residual regression value.

It appears that the error value indicates that the quality of accounting information is proxied by the quality of accruals before the full convergence of IFRS is better than the quality of accruals after the full convergence of IFRS. This is contrary to the initial allegations that the quality of accounting information after the adoption of IFRS will be better (Rudra, 2012; Lee, Walker, and Zang, 2013; Deng, 2013; Kao and Wei, 2014; Chua, Cheong, and Geold, 2012).

This study supports the results of the study by Xu and Lu (2014), and Garanina (2014) did not find evidence that the IFRS has increased the value relevance, Barth, et.al. (2007) did not find that the adoption of IFRS has improved the quality of accounting. Even Outa (2011) found that of the eight matrix accounting information quality tested, five showed a decrease in post-matric adoption of IFRS in Kenya, and Lai, et.al. (2013) found that the accrual reliability in Australia decreased significantly after the adoption of IFRS.

4.2. Spearman's Rank Correlation Test

To perform the analysis of spearman's rank correlation test, the steps are: (1) To test the normality, autocorellation, multicoliniearity, and fit of model of the multiple regression equation; (2) Entering data into the multiple regression model of accrual dan cash flow, to get the residual value, respectively for data of annual financial statements for 2010 and 2011 (before the full convergence of IFRS period), and the annual financial statement data for the year 2012 and 2013 (after the full convergence of IFRS period); (3)Residual values accruals and cash flows will be tested by spearman's correlation test, respectively for the period before and after the full IFRS adoption; and (4) Spearman correlation value comparing before and after the period of full adoption of IFRS. More negative correlation value indicates the possibility of greater income smoothing (quality of accounting information is lower).

Correlation analysis was used to test whether there is a relationship between the accrual and cash flows. The regression models are formulated and after processing the data obtained through the regression results for each model as follows:

Cash Flow Reggression Model period 2010-2011:

CF = -0,511 + 0,022 SIZE + 0,003 GROWTH – 0,008 EISSUE + 0,0002 LEV + 0,014 DISSUE Cash Flow Regression Model period 2012-2013:

CF = -0,482 + 0,020 SIZE + 0,045 GROWTH – 0,020 EISSUE - 0,001 LEV - 0,021 DISSUE Accrual Regression Model period 2010-2011:

ACC = -0,076 + 0,003 SIZE - 0,001 GROWTH + 0,017 EISSUE - 0,0004 LEV - 0,030 DISSUE Accrual Regression Model period 2012-2013:

ACC = -0,060 + 0,001 SIZE + 0,199 GROWTH + 0,014 EISSUE + 0,00007 LEV - 0,003 DISSUE Of the four equations are then calculated residual value as an indicator of cash flow and accrual and the results were correlated using Spearman's rank correlation.

	Spontinun S Ind	Correlations		
			residual_CF	residual_ACC
Spearman's rho	-	Correlation Coefficient	1,000	-,478**
	residual_CF	Sig. (2-tailed)		,000
		Ν	194	194
		Correlation Coefficient	-,478**	1,000
	residual_ACC	Sig. (2-tailed)	,000	
		Ν	194	194

Tabel 4
Spearman's Rank Correlation Result Period 2010-2011
Correlations

**. Correlation is significant at the 0.01 level (2-tailed).

		Correlations		
			residual_CF	residual_ACC
Spearman's rho	-	Correlation Coefficient	1,000	-,493**
	residual_CF	Sig. (2-tailed)		,000
		Ν	194	194
		Correlation Coefficient	-,493**	1,000
	residual_ACC	Sig. (2-tailed)	,000	
		Ν	194	194

Tabel 5
Spearman's Rank Correlation Result Period 2012-2013
Correlations

**. Correlation is significant at the 0.01 level (2-tailed).

The test results showed that the negative correlation value before the full convergence of IFRS period is smaller than after the full convergence period.

Researchers presume that the negative correlation is greater in the period after the full IFRS kovergensi caused by using principle-based IFRS, whereas the old IAS adopt US GAAP which uses rule-based. Inherent characteristics of the principle-based framework is the potential for different interpretations of the same transaction. This situation led to the emergence of possibilities and creates uncertainty and thus require extensive disclosures in the financial statements. (Forgeas, 2008). This causes the IFRS provide greater opportunity for management to use judgment compared ruled-based, so that the value becomes greater discretionary accrual. Chua, Cheong, and Gould (2012) reported the fact there is evidence to suggest that financial firms do earnings management after the adoption of IFRS in Australia.

4.3. Path Analysis Test

Steps in path analysis test: (1) Perform regression for a model equation (1), to see the effect of X on Y; (2) Perform regression for a model equation (2), to see the effect of X and Y to Z; and (3) Calculate the direct and indirect effect of X to Z

Table 5		
Regression Model Result		
Structural Equation 1	Structural Equation 2	
Mean :	Mean:	
AIQ : 49.547	ASMINF : 44.482	
IFRS : 0.500	IFRS : .505	
Std. Deviation:	AIQ : 49.487	
AIQ : 3.438	Std. Deviation:	
IFRS : 0.501	ASMINF : 37.256	
Standard Error of the Estimate:	IFRS : .501	
3.298	AIQ : 3.317	
Coefficient Beta (py,x)	Standard Error of the Estimate:	
IFRS : .220	32.666	
Coefficient Correlation:	Coefficient Beta (ρz,x) dan (ρz,y)	
(+) 0.220	IFRS :165	
ρ value	AIQ :.498	
IFRS : .001	Coefficient Correlation:	
R Square	ASMINF-IFRS :052	
.048	ASMINF-AIQ : .461	
	ρ value	
	IFRS : .007	
	AIQ :.000	
	R Square	
	.238	

Tabla 5

Based on the data in the table, the structural equations (1) and structural equation (2) are as follows: $Y = 0.220.X + \varepsilon 1$ (1)

 $Z = -0.165.X + 0.498.Y + \varepsilon_{2}.....(2)$

 ϵ 1 dan ϵ 2 can be calculated using formula:

$$\varepsilon = \sqrt{1 - R^{2}}$$

$$\varepsilon_{1} = \sqrt{1 - 0.048}$$

$$= 0.976$$

$$\varepsilon_{2} = \sqrt{1 - 0.238}$$

$$= 0.873$$
Figure 2
Path Analysis Test Result
$$0.976$$
Kualitas Informasi
Akuntansi (Y)
$$0.498$$

$$0.873$$
Adopsi IFRS
(X)
$$-0.165$$

$$(Z)$$

4.3.1. Structural Equation 1 Test Resu

The average value for the variable quality of accounting information and IFRS respectively 49.547 and 0.500, while the standard deviation of each of 3.438 and 0.500. The standard error of the estimate for 3.298 (the unit used is the dependent variable, namely the quality of accounting information). It appears that the value of the standard error of the estimate is smaller than the standard deviation value of accounting information quality, which means regression model is better to act as a predictor of the quality of accounting information than the average quality of accounting information itself. F-significance value of 0.001 indicates that the IFRS as independent variables significantly influence the dependent variable quality of accounting information is proxied by the quality of accounting information. Marked positive correlation indicates that in the aftermath of the adoption of IFRS, there is an increase in residual value which indicates a decrease in the accrual quality (quality of accounting information). This result is contrary to the allegations of the original (Deng, 2013; Kao and Wei, 2014; Chua, Cheong, and Gould, 2012; Adibah et al, 2013; Cormier, 2014; Horton, Serafeim, and Serafeim 2010; Cascino and Gassen 2012; and Paglietti, 2009)

4.3.2. Structural Equation 2 Test Result

The average value for the variable asymmetry of information, the quality of accounting information and IFRS respectively 44.482, 49.487, and 0.505, while the standard deviation is respectively 37. 256, 33.17, and 0.501. The standard error of the estimate of 32.667 (the unit used is the dependent variable, namely the information asymmetry). It appears that the value of the standard error of the estimate is less than the value of the standard deviation of the asymmetry of information, which means regression model is better to act as a predictor of asymmetry of information than the average asymmetry of information itself. Significant value-F for 0.00 indicate that the regression model can be used as predictors of the dependent variable asymmetry of information. Correlation coefficient on the variable information asymmetry IFRS and information asymmetry variable to variable quality of accounting information of each negative and positive 0.052 and 0.462. The correlation coefficient shows a very weak relationship and a relationship that is strong enough. IFRS beta coefficient of -0.165 while the quality of accounting information for 0.498. Negative mark on the correlation coefficient and beta coefficient IFRS variable indicates the trade-offs between IFRS and asymmetry of information. While the variable quality of accounting information and information asymmetry variable indicates a unidirectional relationship. Sig. t to the variable quality of the IFRS and accounting information respectively are 0.007 and 0.000. Both values of <0.05, which means a second partial independent variables significantly influence the dependent variable. Judging from the correlation coefficient and beta coefficient, shows that the variable quality of accounting information have a stronger relationship with the variable information asymmetry than IFRS.

4.3.3. Magnitude Effect of Direct and Indirect between IFRS Variable, Quality of Accounting Information and Information Asymmetry

Coefficient beta showed the following results:

- a. The direct effect of IFRS variable to variable of accounting information quality is equal to 0.220 or 22%, while 78% is explained by other factors outside the model.
- b. The direct effect of IFRS variable to variable asymmetry of information is at 0.165. While the indirect effect (via variable accounting information quality) is equal to 0.109, so that the total effect of IFRS variable to variable asymmetry of information is 0.274.
- c. Direct effect of accounting information quality on asymmetry of information is 0.498, or 49.8%, which means that 50.2% explained by other factors outside the model.

5. Conclusion and Recommendation

5.1. Conclusion

Wilcoxon signed rank test results showed that there was no significant difference between the quality of accounting information period before and after the full convergence of IFRS. Quality information quality is measured using the accrual quality. The results showed that full convergence of IFRS in Indonesia do not meet the expected results. No evidence that the adoption of IFRS has improved the quality of accounting information. This result is not in accordance with the allegations in the beginning. The error value in the period before full convergence is smaller than the error value after the period, showing the quality of accounting information before full convergence period is better than later.

In addition using modified Dechow and Dichev model (2002), the researcher also tested the quality of accounting information before and after the full convergence of IFRS period by Spearman's rank correlation test (Barth, et.al., 2008; Lang et al, 2003) between the accrual by cash flow (accrual based earnings management). The test results showed that the negative correlation value before the adoption of IFRS is smaller than after the adoption of IFRS. This indicates that smoothing earnings after the adoption of IFRS are even greater than before the adoption of IFRS.

Both results contradict the original allegations. Researcher presume it is caused by the use of principle base in IFRS, in which the base allows the management to do more judgment than the rule-based. which in this study used proxy for measuring the quality of accounting information are discretionary accrual and correlation between accrual and cash flow. Both of these models are the model that are often used to predict earnings management.

Impact of IFRS convergence on the quality of accounting information and its influence on the asymmetry of information is done by using path analysis (path analysis). From the results of path analysis found that IFRS have a direct effect and exhibited significantly to the asymmetry of information with great influence -0165 or 16.5%, while the indirect influence is equal to 0.109, or 10.9%, so that the total effect of IFRS on information asymmetry variable is 0.274, or 27.4%. The variable accounting information quality also direct and significant impact on information asymmetry, with great influence 0.498 or 49.8%. From the test results visible lines that quality of accounting information has a greater influence on the asymmetry of information compared to IFRS. Judging from the correlation coefficient, IFRS has positive and weak correlation with the variable accounting information quality, means that and weak but negative correlated with the variable information asymmetry, while the variable of accounting information quality has a strong positive correlation with variable information asymmetry. The results support the results of research conducted by Kao and Wei (2014), Naranjo, Saavedra, and Verdi (2013), and Muller, Riedl and Sellhorn (2011).

In addition the results of study prove that the accounting information quality significantly affect the asymmetry of information has supported by Bhattacharya, Desai, and Venkataraman (2013), Cerquira and Pereira (2014), Rahman, et.al. (2013) find that earnings management to lower information asymmetry, and Ferdousi, Shoorvarzy, and Sepehri (2012).

Research results of the Capital Market Supervisory Agency and Financial Institution (2011) who in its research report, concluded that investors in Indonesia capital market has not been able to obtain sufficient information so that this can sometimes lead to errors pricing (mispricing), proving that in fact there are many things which needs to be addressed in the regulation of capital markets transactions in Indonesia.

5.2. Recommendation

The results showed that the full convergence of IFRS in Indonesia do not meet the expected results. No evidence that the convergence of IFRS has improved the quality of accounting information, and this result is not in accordance with the allegations in the beginning. Based on the results of the study, the researcher suggested that regulators and policy makers can re-evaluate the standards and rules that apply in order to increase the efficiency of the capital market in Indonesia. Regulators and policy makers must also ensure that the actors in the capital market have to comply with all standards and rules that have been set.

This study also has various limitations. Among which the number of samples is determined with a tolerable error rate by 5%, and the time span is too short to examine the impact of the application of IFRS, which is only two years before and after of the convergence of IFRS is fully effective. Based on the limitations, researcher suggest to studies after this, in order to minimize the level of tolerable error in the determination of the number of samples, as well as extending the time span (time horizon) of the unit of analysis being tested.

References

Albrecht, W.S., E.K. Stice., and J.D. Stice. (2011), Financial Accounting: Concepts and Applications. *Textbook*. 11th, published by Rob Dewey, USA

Adibah, W.I., et.al. (2013), Earnings Quality and the Adoption of IFRS-Based Accounting Standards Evidence from an Emerging Market. Asian Review of Accounting. Vol. 2, pp. 53-73

Badan Pengawas Pasar Modal dan Lembaga Keuangan. (2011), Laporan Studi Volatilitas Pasar Modal Indonesia dan Perekonomian Dunia. *Tim Studi Volatilitas Pasar Modal Indonesia dan Perekonomian Dunia Kementerian Keuangan Republik Indonesia*

Bae, K.H., H. Tan., and M. Welker. (2008), International GAAP Differences: The Impact on Foreign Analysts. *The Accounting Review*. Vol. 83, No. 3 pp. 593–628

Ball, R. (2005), International Financial Reporting Standards (IFRS): Pros and Cons for Investors. *Lecture Paper at the Institute of Chartered Accountants in England and Wales*. Financial support from the PD Leake Trust and the Graduate School of Business at the University of Chicago, pp.1-63

Ball, R. and L. Shivakumar. (2005), Earnings Quality in UK Private Firms: Comparative Loss Recognition Timeliness. *Journal of Accounting and Economics*. Vol.39, pp. 83-128

Ball, R., S. Jayaraman, and L. Shivakumar. (2012), Mark-to-Market Accounting and Information Asymmetry in Banks. *Working Paper, Copyright*. Chicago Booth, No. 12-35, pp. 1-78

Barth, M.E., W.R. Landsman, M. Lang, and C. Williams. (2007), Accounting Quality: International Accounting Standards and US GAAP. *Research funding by the Center for Finance and Accounting Research*. Kenan-Flagler Business School and the Center for Global Business and the Economy, Stanford Graduate School of Business, pp. 467-498

Barth, M. E., W.R. Landsman, D.Q. Young and Z.L. Zhuang.(2013), Relevance of Differences Between Net Income Based on IFRS and Domestic Standards for European firms. *Research funding by the Center for Finance and Accounting Research*. Kenan-Flagler Business School and the Center for Global Business and the Economy, Stanford Graduate School of Business, pp. 1-57 Bhattacharya, N., H. Desai, and K. Venkataraman.(2013), Does Earnings Quality Affect Information Asymmetry? Evidence from Trading

Costs. Contemporary Accounting Research. Vol. 30 No. 2 (Summer 2013) pp. 482–516

Benston, G. J., M. Bromwich, and A. Wagenhofer. (2006), Principles- Versus Rules-Based Accounting Standards: The FASB's Standard Setting Strategy. *ABACUS*. Vol. 42, No. 2, pp.165-189

Bilgrami, N. (1998), Characteristics of Emerging Capital Markets. Savings and Development. Vol. 22, No. 3 Published by Giordano Dell-Amore Foundation, pp. 279-282

Callahan, C. M., C. M. C. Lee, & T. L. Yohn. (1997), Accounting information and bid-ask spreads. Accounting Horizons. 11(4), pp. 50-60

Cascino, S., and J. Gassen. (2012), Comparability Effects of Mandatory IFRS Adoption. SFB 649 Discussion Paper 2012-009. Research supported by the Deutsche Forschungsgemeinschaft through the SFB 649 "Economic Risk" at Hamboldt University and London School of Economics, pp.1-64

Cerqueira, A., and C. Pereira. (2014), Financial Reporting Quality and Information Asymmetry in Europe. *Economics and Management, Management, Department, University of Porto School.* Working Paper, JEL Codes G12, G14, pp. 32-52

Chatham, M.D.(2005), Does The Extent Of Compliance With International Accounting Standards Affect Information Asymmetry?. *Dissertation Submitted in Partial Fulfillment of the Requirements for Doctor Philosophy Degree*. Oklahoma State University, Copyright by ProQuest Information and Learning Company, United States.

Chua, Y.L., C. S. Cheong, and G. Gould. (2012), The Impact of Mandatory IFRS Adoption on Accounting Quality: Evidence from Australia. *Journal Of International Accounting Research*. American Accounting Association, Vol. 11, No. 1, pp. 98-108

Core, J.E., W.R. Guang, and R. Verdi. (2008), Is Accruals Quality a Priced Risk Factor? Journal of Accounting and Economic. Vol. 46, Issue, pp. 295-327

Cormier, D. (2014), The Incidence of Corporate Governance and IFRS on Information Asymmetry and the Value Relevance of Earnings: Some Canadian Evidence. *Chaire d'information financiere et organisationnelle ESG UQAM*. Vol 1, pp. 1-24

Dechow, P.M., and I.D. Dichev. (2002), The Quality of Accruals and Earnings: The Role of Accrual Estimation Errors. *The Accounting Review*. Vol. 77, Supplement, pp.35-59

Deng, S. (2013), The EU's Adoption of IFRS and the Implication for China: In the Perspective of Accounting Quality and Information Comparability. *Business Administration Master's Thesis*. Karlstad Business School, Sweden

Dong Ji, Xu., and W. Lu.(2014), The value relevance and reliability of intangible assets. Asian Review of Accounting, Vol. 22 Iss 3 pp. 182 - 216

DSAK. 2009. Pernyataan Standard Akuntansi Keuangan. Ikatan Akuntan Indonesia.

Dumitru, G. (2011), The Accounting Information Quality Concept. Journal of Academic Research in Economics. Volume 3, No.3, November, pp. 559-571

Ferdowsi, M.S., M. R. Shoorvarzy and F. Sepehri. (2012), Impact of Accruals Quality on the Equity Risk Premium in Iran. Academy of Taiwan Business Management Review. Volume 8, No.3, December, pp. 90-96

Forgeas, R.(2008), Is IFRS that Difference from U.S. GAAP?. An Article of the American Institute of Certified Public Accountant IFRS Resources. www.IFRS.com/overview/general/differences/html

Francis, J. R., I. K. Khurana, and R. Pereira. (2005), Disclosure Incentives and Effects on Cost of Capital Around the World. *The Accounting Review*, 80 (4): 1125–62, pp. 295-327

Garanina, T.A., and P.S. Kormiltseva. (2014), The effect of international financial reporting standards (IFRS) adoption on the value relevance of financial reporting: a case of Russia. Accounting in Central and Eastern Europe (Research in Accounting in Emerging Economies, Volume 13) Emerald Group Publishing Limited, pp.27 – 60

Hadad, M.D. (2013), Konvergensi IFRS Perlu Perubahan Pola Pikir Akuntan. (http://Akuntanonline.com). Posted 5 Maret.

Hail, L., C. Leuz., and P. D. Wysocki. (2011), Global Accounting Convergence and the Potential Adoption of IFRS by the United States: An Analysis of Economic and Policy Factors. *SSRN Working Paper Series*. Published by Social Science Research Network

Hope, O.K., Thomas, W.B., and D. Vyas. (2013), Financial Reporting Quality of U.S. Private and Public Firms. *The Accounting Review*. Vol. 88, No.5, pp. 1715-1742

Horton, J., G. Serafeim, and I. Serafeim. (2013), Does Mandatory IFRS Adoption Improve the Information Environment? *Contemporary* Accounting Research, Vol. 30 No.1, Spring, pp.388-423

Houqe, N., T. Van Zijl, K.L. Dunstan, dan A.K.M.W. Karim. (2011), The Effect of IFRS Adoption and Investor Protection on Earnings Quality Around the World. SSRN Working Paper Series. Social Science Research Network, pp. 1-36

IAI. (2008), Konvergensi Standar Akuntansi Keuangan (SAK) Indonesia ke International Financial Reporting Standards (IFRS). *Info IAI*. Retrieved from http://www.iaiglobal.or.id/berita/detail.

IASB. (2010), Conceptual Framework for Financial Reporting. IFRS Foundation

Kao, H.S., and T.H. Wei. (2014), The Effect of IFRS, Information Asymmetry and Corporate Governance on The Quality of Accounting Information. *Asian Economic and Financial Review*. 4(2), pp. 226-256

Kurniawan, M.D. (2010), Tantangan Pengimplementasian IFRS di Indonesia. Kompas. 6 Mei

Lai, C.Y., Y.Li., Y. Shan., and S.L. Taylor.(2013), Cost of Mandatory IFRS: Evidence of Reduced Accrual Reliability. <u>SSRN Working Paper Series</u>

Lang, M., J. Raedy and M Yetman. (2003), How Representative Are Firms That Are Cross Listed in the United States? An Analysis of Accounting Quality. *Journal of Accounting Research*. Vol.41 pp.363-386.

Lang, M., J. Raedy and W. Wilson. (2006), Earnings Management and Cross Listing: Are Reconciled Earnings Comparable to US Earnings?, Journal of Accounting and Economics. Vol. 42, pp. 255-283

Lee., M. Walker, and C. Zeng. (2013), Does IFRS Convergence Affect Financial Reporting Quality in China?. *Research Report*. The Association of Chartered Certified Accountants, Certified Accounting Education Trust, London, pp. 1-24

Leuz, C., & R.E. Verrecchia. (2000), The economic consequences of increased disclosure. Journal of Accounting Researc. 38(3), pp. 91–124

Leuz, C., D. Nanda and P. Wysocki. (2003), Earnings Management and Investor Protection: An International Comparison. Journal of Financial Economics. Vol.69, pp. 1-38

Levich, R.M. (2010), The Importance of Emerging Capital Markets. *The Brookings-Wharton Papers on Financial Services*. 4th Annual Conference on "Integrating the Emerging Market Countries into the Global Financial System

Muller, K.A., E. J. Riedl, and T. Sellhorn. (2011), Mandatory Fair Value Accounting and Information Asymmetry: Evidence from the European Real Estate Industry Management Science Vol. 57, No. 6, pp. 1138-1153

Naranjo, P., D. Saavedra and R.S.Verdi. (2013), Financial Reporting Regulation, Information Asymmetry and Financing Decisions around the World. *EAA Annual Congress 2013 and the 2013 IAS conference*. Funded by the MIT Sloan School of Management and the Deloitte Foundation, pp. 1-54

Outa, E.R. (2011), The Impact of International Financial Reporting Standards (IFRS) Adoption on the Accounting Quality of Listed Companies in Kenya. *International Journal of Accounting and Financial Reporting*. Vol. 1, No. 1, pp. 212-242

Paglietti, P. (2009), Investigating the Effects of the EU Mandatory Adoption of IFRS on Accounting Quality: Evidence from Italy. *International Journal of Business and Management*. Vol. 4, NO. 12, pp. 3-19

Purwanti, M., and A. Kurniawan. (2013), The Effect Of Earnings Management and Disclosure on Information Asymmetry. International Journal of Scientific & Technology Research. Volume 2, Issue 8, pp. 98-108

Rahman, A.F., M.S. Hassan, N. M. Saleh, and Z. A. Shukor. (2013), The Effect Of Underinvestment On The Relationship Between Earnings Management And Information Asymmetry. *Asian Academy Management Journal Of Accounting And Finance*. Vol. 9, No. 2, pp.1-28

Ramanna, K., and R. Watts. (2009), Evidence on the Effects of Unverifiable – Value Accounting. *Harvard Business School Working Paper*. 08-014 (http://ssrn.com/abstract 1012139)

Rudra, T. (2012), Does IFRs Influence Earnings Management? Evidence from India. Journal of Management Research. Vol. 4, No. 1: E7, pp. 1-13

Shortridge, R.T., and M. Myring. (2009), Defining Principles-Based Accounting Standards. *The CPA Journal Online*. Retrieved from www.nysscpa.org/cpajournal/2004/804/essensials/p34.htm

Trainor, J.E. (2011), Large Shareholder Heterogeneity: The Effect on Firms' Accounting Quality and Information Asymmetry. *Dissertation Submitted to the Faculty of The College of Business in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy.* Florida Atlantic University Boca Raton, Florida

Vakilifard, H., H. Nikoomaram, V. Rostami and M. Salehi. (2011), Information Asymmetry Gap Analysis Between Users and Preparers of Accounting Information Under Qualitative Characteristic of Financial Reporting: Evidences of Iran. *International Journal of Academic Research*. Vol.3. No.2, pp. 231-243

Wahlen, J.M., et.al. (2000), American Accounting Association's Financial Accounting Standards: Response to the FASB Preliminary Views: Reporting Financial Instruments and Certain Related Assets and Liabilities at Fair Value. *American Accounting Association Accounting Horizon*. Vol. 14, No. 4, pp. 501-508

Watts, R.L., and J.L. Zimmerman. (1986), Positive Accounting Theory. Prentice Hall

Author Biography. Born in Medan, May 21, 1975. Graduated in Accounting in 1998 at Gadjah Mada University, Yogyakarta. Finished the Master of Accounting Program in 2005 at the University of North Sumatra, and currently the author is a student of Doctoral Accounting Study Program at the University of Padjadjaran Bandung. The writer is a lecturer at the State Polytechnic of Medan.

The IISTE is a pioneer in the Open-Access hosting service and academic event management. The aim of the firm is Accelerating Global Knowledge Sharing.

More information about the firm can be found on the homepage: <u>http://www.iiste.org</u>

CALL FOR JOURNAL PAPERS

There are more than 30 peer-reviewed academic journals hosted under the hosting platform.

Prospective authors of journals can find the submission instruction on the following page: <u>http://www.iiste.org/journals/</u> All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Paper version of the journals is also available upon request of readers and authors.

MORE RESOURCES

Book publication information: http://www.iiste.org/book/

Academic conference: http://www.iiste.org/conference/upcoming-conferences-call-for-paper/

IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digtial Library, NewJour, Google Scholar

