

# Accrual and Information Asymmetry

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*This study examines the impact of accrual on information asymmetry reflected in trading cost in financial markets. I find that poor earnings quality has positive significant relation with bid ask spread as proxy of information asymmetry. Poor earnings quality is identified using Jones and modified Jones model. The positive relation between discretionary accruals and information asymmetry is robust using three different models to separate nondiscretionary to discretionary accruals. However, this study does not find significant relation between cash flow information and bid ask spread as a proxy for information asymmetry.*

Field Research: Accounting

## 1. Introduction

Information asymmetry has been the subject of significant interest among academics. Prior studies predict that an increase in information asymmetry adversely affects cost of capital as liquidity providers increase bid-ask spread to guard against adverse selection risk (Kyle, 1985). Recent theoretical work argues that information environment; specifically the extent of private information and differences in information across investors affects a firm's cost of capital (Verecchia, 2006). Other research in information asymmetry suggest that information asymmetry causes an unwillingness to trade and increase the cost of capital as investor protect themselves against potential losses (Bhattacharya and Spiegel, 1991) Another study find that information asymmetry increase the level of earnings management (Richardson, 2000). This study suggests a systematic relationship between the magnitudes of information asymmetry as measured by bid-ask spread and the level of earnings management. Richardson argues that in the presence of high level of information asymmetry, managers will manipulate earnings.

Lambert et al. (2006) argue that the link between information and cost of capital arises due to the precision of information about the distribution of the firm's future payoffs. In a world with perfect competition among investors, they show that higher precision results in a greater resolution of uncertainty about future payoffs and hence lowers cost of capital, ceteris paribus. Thus, Lambert suggests a model that shows how the degree of precision of information and not the asymmetric distribution of information across investors that affects cost of capital.

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However, Lambert et al. acknowledge that in case of imperfect competition, information asymmetry will affect the cost of capital by adversely affecting the willingness of liquidity providers to supply liquidity. An important implication is that the quality of reported earnings can affect the cost of capital via its impact on information asymmetry. The nature of accrual accounting entails estimation of future cash flows and a subjective allocation of past cash collection. Thus, earnings quality can affect the uncertainty about the future distribution of firm's payoffs and thereby also affect the information asymmetry between informed and uninformed investors. Evidence in Sloan (1996) shows that earnings of firms with large accruals are mean reverting but that the marginal investors fails to fully incorporate the information into prices, causing high accruals firms to be overpriced.

Extant research also suggest that a subset of sophisticated investors (short sellers) are able to discern that persistency of earnings reported by firms with high accruals are not sustainable and assume positions accordingly to arbitrage on the overpricing (Hirschleifer et al., 2005, Desai et al., 2006). Siddharta and Cready (1997) examine the relation between institutional ownership and predisclosure information asymmetry as revealed by trading volume surroundings earnings announcement date. They find that volume response in the two-day and seven-day period reaches a maximum at around 50% institutional ownership. Hence, institutional ownership is associated with sizable systematic variations in observed volume responses. These results imply that the relatively less informed marginal investor may be unable to process information contained in earnings quality as efficiently as the more sophisticated arbitragers. As a consequence, poor earnings quality can exacerbate the information asymmetry between investors in the financial market.

Subramanyam (1996) finds that market attaches value to different component of earning. Accruals, as one of earnings components, have incremental information content. Further, by decomposing accruals into discretionary and nondiscretionary components, he finds that discretionary accruals are on average priced by the market. The pricing of discretionary accruals is consistent with two alternative scenarios. In the first scenario, market is efficient and prices the discretionary component because it improves the ability of earnings to reflect economic value of the firm. Based on this scenario, managers improve the value relevance of earnings by smoothing income or by communicating private information about future profitability that is not reflected in historical cost accounting. In the second scenario, discretionary accruals distort earnings, probably because of opportunistic earnings management. In this case, pricing of discretionary accruals is evidence of mispricing. He finds that discretionary accruals does not represent opportunistic earnings management, consistent with the first scenario. Market prices discretionary accrual positively, because it captures value-relevant information.

Further, Francis et al. (2005) examine the prediction that information risk is priced. They argue that earnings quality represents an important source of information risk in financial markets, and create an accrual-based metric of

earnings quality based on the measure proposed in Dechow and Dichev (2002). They document that poor earnings quality adversely affects the cost of equity and debt after controlling for market, size and book-to-market factors. Bhattacharya et al (2007) provide empirical support for a crucial assumption in Francis' study. Specifically, Francis et al. maintain an assumption that earnings quality affects cost of capital through information risk because poor earnings quality increases information asymmetry between informed and uninformed investors. They find that poor earnings quality increases information asymmetry as reflected in trading cost. This study proved empirical support for the assumption used in Francis' study.

This study further examines the relationship between earnings components and level of information asymmetry. As in Subramanyam (1996), I find that earnings components have different effects on information asymmetry. By further decomposing accruals, I find that discretionary accruals have positive significant correlation with bid-ask spread, indicating that poor accruals quality increase information asymmetry between managers and users of financial statement. This result also support the second scenario of Subramanyam study, that discretionary accrual relatively reflect opportunistic behavior of earnings management. This result contributes to the extent that market do react to the accrual policy chosen by the firms. It will be interesting to find out whether this situation hold in a more developed market structure as information will be analyzed more thoroughly.

## **2. Literature Review and Hypotheses Development**

Prior theoretical literature on disclosure suggests that better disclosure policies by firms reduce information asymmetry between insiders and outsiders by bringing private information into the public domain (Verrechia, 2001). Empirical research also provides evidence consistent with the notion that higher quality public information reduces information asymmetry and the cost of equity capital (Botosan, 1997). Further, Lobo and Zhou (2002) test the simultaneous relation between level of disclosure and earnings management. They document that earnings management have positive simultaneous correlation with level of disclosure. Replicating the study in Indonesia, Bachtiar (2003) also document similar relation between earnings management and disclosure policy.

Earnings is one of the premier sources of public financial disclosures, and investor and managers consider earnings as an important summary indicator of firm performance. Earnings also serves as key input for firm valuation. However, accruals component of earning involves estimates and judgments. Consequently, intentional and unintentional errors in accrual weaken the relation between current earnings and future cash flows, thereby reducing earnings quality. The quality of earnings related disclosure is the focus of several recent regulations. In Indonesia, Fitriany (1999) documented that voluntary disclosure correlated with higher performance. The regulation in Indonesia has recently increased the level of disclosure for listed firms in Jakarta's stock exchange.

Accounting principles, in order to enhance relevancy of financial statement, provide flexibility for managers to select appropriate accounting method and estimation. However, this flexibility also provides opportunity for managers to manage earnings. Richardson (2000) documents that the presence of information asymmetry affects management incentives to manage earnings. Similar study in Indonesia, find similar evidence that information asymmetry have correlated positively with the level of earnings management (Wasilah, 2004). Subramanyam (1999) argues that discretionary accrual can either distort earnings or enhance value relevance of earnings information. Pricing of discretionary accruals is a joint test of (1) market pricing mechanism and (2) the nature of the discretionary accruals. In Indonesia, Siregar (2005) finds mixed evidence relating discretionary accruals and stock returns. This result suggests that stock market in Indonesia tends to be in the semi-strong form.

Bhattacharya et al. (2007) document that the effect of poor earnings quality on information asymmetry is likely to be heightened at earnings announcement. They further suggest that incremental information asymmetry associated with the quality of earnings disclosure is likely to be pronounced during earnings announcement period. Sloan (1996) finds that the accrual anomaly is concentrated on trading days surrounding earnings announcements, and is presumably related to predictable patterns in earnings surprises for firms with poor earnings quality. Therefore, this study intends to find similar evidence in Indonesia. Using models developed in Subramanyam (1996), this study aims to find evidence that:

Hypothesis I: Discretionary accruals affect the information asymmetry around earnings announcement period.

### **3. Empirical Proxies**

#### **3.1. Measuring Information Asymmetry**

Market microstructure theory suggest that one persistent adverse selection problem facing market makers is the possibility that material firm-specific information has not been publicly disclosed by the firm. Withheld information may be privately available to select investors who invest in costly information acquisition, creating an ongoing adverse selection problem. When uncertainty about information events exists, market traders' increases bid-ask spread to offset the potential losses of trading. Therefore, over the long time horizon, when the possibility of material firm-specific information exist and that information is not completely disclosed, bid-ask spread can be used as proxy for the information asymmetry between the manager and the share holders (Richardson, 2000)

Market reacts differently during the period of earnings announcement. To investigate how earnings quality impacts the bid-ask spread as proxy of information asymmetry, this study use average of bid-ask spread in a 3-day window (days -1 through day 1) centered on earnings announcement date of year  $t+1$ . Accrual quality measures are based on annual earnings data of year

t, therefore the change in information asymmetry observed in this study centered on a 3-day window during the latest earning announcement date.

### 3.2. Measuring Accrual Quality

This study assumes that the cross-sectional Jones model accurately decompose accruals into its discretionary and nondiscretionary components. While Jones model and its variations have been used extensively to detect earnings, management, the ability of these models to decompose accruals into discretionary and nondiscretionary components is arguable. Measurement error is of particular concern because it not only introduces noise but also is an alternative explanation to the results. While the sensitivity analysis confirms the robustness of the result, the possibility of measurement error remains as a limitation in this study.

Recent study uses the measure of earnings quality proposed by Dechow and Dichev (2002). Their model is predicated on the idea that, regardless of management intent, accruals quality is affected by the measurement error in accruals. Intentional error arises from incentive to manage earnings, and unintentional error arises from management lapses and environmental uncertainty. DD's approach regresses working capital accruals on cash from operation in the current period, prior period and future period. The unexplained portion of the variation in the working capital accruals is an inverse measure of accruals quality (a greater unexplained portion implies poorer quality). However, in this study, the cash from operation in future period is not available, since the Osiris data base only provides the latest earnings announcement date. The date is crucial to measure the bid-ask spread during earnings announcement period.

To provide robustness of the result, this study uses the following Jones model and its modification:

#### 1. Jones (1991)

$$ACCR_{it} = \alpha_0 + \alpha_1 \Delta REV_{it} + \alpha_2 PPE_{it} + e_{it}$$

Where

$ACCR_{it}$  : total accrual, measured by the difference of income before extraordinary item and cash flow from operating activities

$\Delta REV_{it}$  : change in revenue, measured by change in  $Sales_{it}$  relative to  $Sales_{it-1}$

$PPE_{it}$  : gross value of property, plant and equipment in year t

All variables are deflated by the beginning-of-period total asset

2. Dechow et al. (1995)

$$ACCR_{it} = \alpha_0 + \alpha_1 (\Delta REV_{it} - \Delta REC_{it}) + \alpha_2 PPE_{it} + e_{it}$$

Where

ACCR <sub>it</sub>	: total accrual
ΔREV <sub>it</sub>	: change in revenue, measured by change in Sales <sub>it</sub> relative to Sales <sub>it-1</sub>
ΔREC <sub>it</sub>	: change in net account receivable in year t relative to year t-1
PPE <sub>it</sub>	: gross value of property, plant and equipment in year t

All variables are deflated by the beginning-of-period total asset

3. Kasznik (1999)

$$ACCR_{it} = \alpha_0 + \alpha_1 (\Delta REV_{it} - \Delta REC_{it}) + \alpha_2 PPE_{it} + \alpha_3 \Delta CFO_{it} + e_{it}$$

Where

ACCR <sub>it</sub>	: total accrual
ΔREV <sub>it</sub>	: change in revenue, measured by change in Sales <sub>it</sub> relative to Sales <sub>it-1</sub>
ΔREC <sub>it</sub>	: change in net account receivable in year t relative to year t-1
PPE <sub>it</sub>	: gross value of property, plant and equipment in year t
ΔCFO <sub>it</sub>	: change in operating cash flow in year t relative to year t-1

All variables are deflated by the beginning-of-period total asset

## 4. Research Design

### Data and Sample Selection

This study use all listed firms in Indonesia that announce earnings for the period ended 31 December 2006, during the period of January through June 2007. Details of sample firms are as follow:

Number of firms that announce earning from January through June 2007	83 firms
Less financial statement for the year ended in 2005	(6) firms
Less firms without any trading during announcement period	<u>(24) firms</u>
Firms used as samples	53 firms

Banks and financial institution are excluded from the sample because the distinguished characteristics of accruals for this type of industry differ significantly with accruals of other industry. Following Richardson, this study use 3-day window period to measure average bid-ask spread during earnings announcement. The average bid-ask further scaled by average of bid-ask spread over the test period.

## 5. Empirical Result

### a. Descriptive Statistics.

Table 1 reports the descriptive statistics for the sample firms. Sample data consist of 53 firms with average of total assets of over 500 million. Since this study uses only firms reported earnings during early period (January to June), the data used might be slightly bias toward relatively larger listed firms. Average earnings is over 50 million with a small portion of firm reported loss. However the standard deviation of the sample is quite high, increasing the possibility that the data does not follow normal distribution.

**Table 1 - Descriptive Statistics for Sample Firms  
(numbers are in Rp. 000)**

	N	Minimum	Maximum	Mean	Std. Deviation
PPE_06	53	47	2775520	263012.94	442325.809
AR_06	53	8	275419	43838.92	55624.489
AR_05	53	0	240522	35695.58	48885.892
SALES_06	53	170	2928541	425294.66	578621.105
SALES_05	53	1248	2527705	349597.30	481397.888
CFO_06	53	-51254	619725	55805.13	105896.218
CFO_05	52	-223551	638568	39450.67	121613.724
TA_06	53	5697	3805721	511205.38	676576.834
EARN_06	53	-25943	274048	45899.40	71526.727
Valid N(listwise)	52				

Where:

- PPE\_06 : gross value of property, plant and equipment in year 2006
- AR\_05/06 : account receivable, in year 2005 and 2006
- SALES\_05/06 : sales in 2005 and 2006
- CFO\_05/06 : operating cash flow in 2005 and 2006
- TA\_05 : total accrual in 2006
- EARN\_06 : net income in 2006

After separating discretionary and nondiscretionary accrual using three model derived from Jones model, the statistic descriptive for variables in the regression are as follow:

**Tabel 2 - Descriptive Statistics**  
**(numbers are deflated by total assets except spread)**

	mean	median	min	max	st.dev
NDAC1	0,00	0,39	-5,60	0,70	1,00
DAC1	0,00	-0,32	-3,79	2,35	0,98
NDAC2	0,00	0,39	-5,61	0,68	1,00
DAC2	0,00	-0,32	-3,80	2,36	0,98
NDAC3	0,00	0,33	-5,60	0,85	1,00
DAC3	0,00	-0,28	-3,59	2,28	0,97
SPREAD	71,19	21,67	0,00	616,67	131,19

Where:

- NDAC1 : non discretionary accrual computed using model 1
- DAC1 : discretionary accrual computed using model 1
- NDAC2 : non discretionary accrual computed using model 2
- DAC2 : discretionary accrual computed using model 2
- NDAC3 : non discretionary accrual computed using model 3
- DAC3 : discretionary accrual computed using model 3
- SPREAD : average bid-ask spread 3 days around the announcement date

This study does not separate income increasing accrual and income decreasing accrual. Therefore; the mean of nondiscretionary accrual and discretionary accrual approximates zero as might be seen on Table 2. Average bid-ask spread around announcement date range from zero, which indicates absent of price change during observed period, to Rp 616,67, the highest average of bid-ask spread during 3-day window.

## **b. Univariate Analysis**

Univariate analysis was performed using steps developed in Subramanyam (1999). Discretionary accruals as independent variable is decomposed using three methods described above.

The following table shows the result of univariate analysis:

Dependent Variable:  
Average Bid-Ask Spread during earnings announcement

Intercept	OCF <sub>it</sub>	NDNI <sub>it</sub>	NI <sub>it</sub>	R <sup>2</sup>
1,008 (000)	-0.021 (0,883)			0,042
0,150 (0,499)			0,706 (000)	0,498
1,009 (0,064)		-1,993 (0,064)	(Jones mod)	0,066
1,009 (0,064)		-1,891 (0,064)	(Dechow)	0.065
1,066 (0,00)		-1,852 (0,070)	(Kasznik)	0,064

Where

OCF : Cash flow from operating activity year t  
 NDNI : Nondiscretionary Income as measured by sum of operating cash flow (OCF) and nondiscretionary accrual (using 3 models)  
 NI : Net income as measured by income before extraordinary items  
 All variables are scaled with total assets at the beginning of period

As shown on table, R2 increase when NI is used as regressant. Net income and NDNI have significant relation with bid-ask spread with different sign. However, even though the coefficient sign of cash flow information is negative as predicted, but the correlation is not significant. Positive correlation between NI and bid-ask spread generally resulted from the component of discretionary accrual. As the negative sign in NDNI implies that earnings information reduce the information asymmetry during earnings announcement period.

The negative sign of NDNI is as predicted, since earnings information is expected to reduce information asymmetry during earnings announcement period. However R<sup>2</sup> decrease significantly as Net Income is replaced by NDNI.

### c. Multivariate analysis

Multivariate analyses use three models to describe the possible impact of earnings information during announcement period.

Model 1:

$$\text{Bid-ask spread} = \alpha_0 + \alpha_1 \text{OCF}_{it} + \alpha_2 \text{NDAC}_{it} + e_{it}$$

Intercept	OCF	NDAC as decomposed using			R <sup>2</sup>
		Jones	Dechow	Kasznik	
1,027 (000)	-0,157 (0,615)	-2,183 (0,034)			0,087
1,027 (000)	-0,160 (0,609)		-2,176 (0,034)		0.087
1,024 (000)				-2,150 (0,036)	0,085

### Model 2

$$\text{Bid-ask spread} = \alpha_0 + \alpha_1 \text{NDNI} + \alpha_2 \text{DAC} + e_{it}$$

	Intercept	NDNI	DAC	R <sup>2</sup>
Jones model	1,069 (000)	-0,258 (0,034)	0,932 (0,00)	0,302
Dechow	1,070 (000)	-0,260 (0,033)	0,487 (0,00)	0,303
Kaszniak	1,069 (000)	-0,244 (0,045)	0,486 (0,00)	0,300

### Model 3

$$\text{Bid-ask spread} = \alpha_0 + \alpha_1 \text{OCF} + \alpha_2 \text{NDAC} + \alpha_3 \text{DAC} + e_{it}$$

	Intercept	OCF	NDAC	DAC	R <sup>2</sup>
Jones	1,028 (000)	-0,071 (0,551)	-0,299 (0,015)	0,468 (000)	0,324
Dechow	1,029 (000)	-0,638 (0,527)	-0,299 (0,015)	0,468 (000)	0,323
Kaszniak	1,020 (000)	-0,440 (0,551)	-0,292 (0,015)	0,468 (000)	0,324

The result of multivariate test provides evidences that nondiscretionary accruals can reduce the level of information asymmetry during earnings announcement period. Meanwhile, discretionary accrual has positive significant correlation with bid-ask spread indicating that management use opportunistic earnings management that further exacerbate the information asymmetry. The positive sign of discretionary accrual persist in the three type of model used to decompose earnings components. Nondiscretionary accrual and Nondiscretionary income have significant negative correlation with bid-ask spread. This result is consistent with the univariate analysis. The negative correlation support the notion of opportunistic behavior of management that in turn will increase the information asymmetry as reflected in higher bid-ask spread.

## 6. Conclusion

This study conducts an empirical investigation of the relationship between information asymmetry and earnings management. Contrast with Richardson (2000) this study found that earnings management affect the level of information asymmetry during announcement period. This study support Bhattacharya (2007) that poor earnings quality increase information asymmetry, at least during periods when earnings-related information is anticipated by market participants. The result propose that the level of earnings management used by managers, which is reflected in discretionary accrual, will result in higher information asymmetry as reflected in higher bid-ask spread. The result is robust using three types of Jones model to

decompose accruals into discretionary and nondiscretionary components. Discretionary accrual that eventually leads to higher bid-ask spread support the scenario that management use flexibility in accounting to manage earnings.

## 7. Limitation of the study

This study relies heavily on Jones model to decompose accruals component into discretionary and nondiscretionary components. Further research can enhance the result by using other models to decompose components of accrual. Francis et al (2005) provide interesting evidence using Dechow model which further decompose accrual into innate and discretionary accrual. This study also do not consider the probability of survivalship bias, because it eliminates 24 firms which has no trading data during announcement date. Further study might overcome this limitation by adding more samples with longer windows to compute bid-ask spread. It will also be interesting to compare the result with empirical result using data from a more developed market structure. Therefore further study might compare the association between accrual and information assymetry in a developed an less developed market.

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## Sample Firms

No	Emit	Release date	No	Emit	Release date
1	GJTL	06/04/2007	40	BTEL	23/03/2007
2	CPIN	06/04/2007	41	INTP	22/03/2007
3	ALMI	05/04/2007	42	SMCB	21/03/2007
4	ATPK	05/04/2007	43	KAEF	21/03/2007
5	APOL	05/04/2007	44	ENRG	19/03/2007
6	BLTA	05/04/2007	45	ELTY	16/03/2007
7	INDR	05/04/2007	46	MPPA	16/03/2007
8	AIMS	04/04/2007	47	TCID	12/03/2007
9	AKKU	04/04/2007	48	DAVO	05/03/2007
10	KBLI	04/04/2007	49	AUTO	02/03/2007
11	JPRS	04/04/2007	50	UNTR	02/03/2007
12	ADMG	04/04/2007	51	AALI	01/03/2007
13	BNBR	04/04/2007	52	ASGR	27/02/2007
14	MAPI	04/04/2007	53	EXCL	26/02/2007
15	SMGR	04/04/2007			
16	RMBA	03/04/2007			
17	INAF	03/04/2007			
18	KLBF	03/04/2007			
19	CTTH	02/04/2007			
20	FASW	02/04/2007			
21	GGRM	02/04/2007			
22	UNVR	02/04/2007			
23	RALS	02/04/2007			
24	ARNA	01/04/2007			
25	AKRA	30/03/2007			
26	ADHI	29/03/2007			
27	DVLA	29/03/2007			
28	IGAR	29/03/2007			
29	LPCK	29/03/2007			
30	ULTJ	29/03/2007			
31	JRPT	28/03/2007			
32	PBRX	28/03/2007			
33	LPKR	28/03/2007			
34	INDF	27/03/2007			
35	ANTM	27/03/2007			
36	SRSN	26/03/2007			
37	SIIP	26/03/2007			
38	AMFG	25/03/2007			
39	ISAT	25/03/2007			