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## Relationship of Earnings Quality and Segment Disclosure in Decreasing Cost of Equity

### Abstract

Investors would analyze the reporting of segments disclosure in the notes to the financial statements, addition to the main reporting that presents earnings and cash flows. We investigated the relationship between the segment disclosure level and the earning quality that could decrease the cost of equity. Sample of this research were 242 firms-years of manufacture industry firms. This research used simultaneous test; the first stage was a regression of segment disclosure level on earning quality and the second stage was a regression on the cost of equity. Segment disclosure level was measured from PSAK 5 Operating Segment (2009); the cost of equity measured using industry-adjusted E/P Ratio; earning quality measured using absolute of accrual quality and absolute of abnormal accrual. We found that earnings quality positively influences on segment disclosure level. We proved that there was a complementary effect between them. The second result showed that the segment disclosure level decreases the cost of equity, but marginally. The third result proved that in the second order condition, the segment disclosure level was stronger in decreasing the cost of equity. We proved that there was endogeneity of segment disclosure level in decreasing cost of equity.

**Keywords:** Cost of Equity; Earning Quality; PSAK 5; Segment Disclosure Level

**JEL Classification:** C34, D23, M14

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### Abstrak

*Investor akan menganalisis pelaporan pengungkapan segmen dalam catatan atas laporan keuangan, selain pelaporan utama yang menyajikan laba dan arus kas. Kami menginvestigasi hubungan tingkat pengungkapan segmen dengan kualitas laba dalam menurunkan biaya modal ekuitas. Sampel penelitian ini sebanyak 242 perusahaan-tahun yang mengambil industri manufaktur. Penelitian ini menggunakan pengujian simultan, dengan first-stage merupakan regresi tingkat pengungkapan segmen atas kualitas laba serta second-stage adalah regresi biaya modal ekuitas. Tingkat pengungkapan segmen menggunakan ceklis dari PSAK 5 Segmen Operasi (2009), biaya modal ekuitas diprosikan dengan industry-adjusted E/P Ratio, serta kualitas laba diprosikan dengan nilai absolut kualitas akrual dan absolut akrual abnormal. Kami menemukan bahwa kualitas laba berpengaruh positif terhadap tingkat pengungkapan segmen. Kami membuktikan adanya efek komplementer antara keduanya. Hasil kedua menunjukkan bahwa tingkat pengungkapan segmen dapat menurunkan biaya modal ekuitas secara marginal. Hasil ketiga, membuktikan bahwa pada second-stage tingkat pengungkapan segmen lebih kuat memengaruhi penurunan biaya modal ekuitas dan terbukti melengkapi (komplementer) kualitas laba dalam menurunkan biaya modal ekuitas. Kami membuktikan adanya endogenitas tingkat pengungkapan segmen dalam kaitan kualitas laba dan penurunan biaya modal ekuitas*

**Kata Kunci:** Biaya Modal Ekuitas; Kualitas Laba; PSAK 5; Tingkat Pengungkapan Segmen

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Information published by the company has to provide added value for investors to take the precise decision. Brown & Hillegeist (2009) states that there are three pieces of information used by investors in evaluating the investing of funds, i.e., earning information, cash flow, and segment reporting. Therefore, in addition to the main reporting that presented earnings and cash flows, investors will analyze the segment reporting disclosed in notes to the financial statements.

Previous studies have investigated the use and advantage of cash flow and earnings information by investors (Chen & Zhang, 2003; Subramanyam & Venkatachalam, 2007; Susan, 2009). Earnings are considered more able to provide information than cash flow because of the accruals that have the prediction power. However, on the other hand, cash flow may be better because the accruals of earnings may allow discretion from managers that can result in improper decision making. For the proper decision, the investor needs a quality of earning information with a little discretion. Barth, Konchitchki, & Landsman (2013) state that transparency of earnings reporting quality can persuade investors to make transactions and investments that are resulting in lowering the cost of capital.

For the business competition, many companies develop product and geographic diversification. Bens, Berger, & Mohahan (2011) conclude that the company with multiple segments discloses segment reporting more transparent and less discretion than single segment. The broad scope of the company's business allows financial statements users to require more detailed information, such as segment reporting for their investment analysis (Chen & Zhang 2003; Suryandari & Arisanti, 2017). For business development strategies and investment efficiency, the companies require substantial funding with a lower cost. The company that reported the detailed product and geographical segment can provide more transparent and credible information. It may affect the investors can make accurate and precise decisions (Tsakumis, Douppnik, & Seese, 2006). A

better segment disclosure quality will be an attraction for investors to place their funds that could be lowering the cost of equity capital.

Some researcher has investigated implementation of international financial reporting standard (IFRS) 8: Operating segment in Europe that has been effective since 2009 (Crawford, Helliard, & Power, 2010; Crawford et al., 2012; Heem & Valenza, 2012; Nichols, Street, & Cereola, 2012; Moldovan, 2014). The study of IFRS 8 also has been investigated in non-Europe sample (Mardini, 2012; Kang & Gray, 2014; Kumar & Sridharan, 2014).

Accounting standards have regulated segment disclosures. However, there are still problems in the implementation of segment disclosures. Alfaraih & Alanezi (2011) find that segment disclosure is still not in accordance with applicable standards. Alfaraih & Alanezi (2011) then highlight that standard compliance in developing countries is still not good, but there is not much research in developing countries on this matter.

Indonesia is one of developing countries that are also adopting IFRS. The adoption of the standard perhaps increases the earning quality. For the guidance of segment reporting, Financial Accounting Standard Board of Indonesian Accounting Association (Dewan Standar Akuntansi Keuangan, DSAK-IAI) regulated and published segment reporting and disclosures in the Statement of Financial Accounting Standards (PSAK) 5: Operating Segment in 2009 for Indonesian Company. PSAK 5 Operating Segment (Revised 2009) revises PSAK 5 Segment Reporting (2000), and it has been active since 2011. PSAK 5 (Revised 2009) adopts the International Financial Reporting Standard (IFRS) 8 Operating Segment. A new standard or a revised standard may increase transparency or financial reporting, and it needs further investigation.

Some Indonesian researchers have explored segment reporting, but the investigation of segment reporting for Indonesian company still limited. The studies of segment reporting on Indonesian com-

pany are the determinants and impacts on market responses (Fitriany & Aulia, 2009; Pratiwi & Palupi, 2017), investor response and perception of segment reporting (Dermawan, Haryanto, & Yuniarwati, 2014; Suryandari & Arisanti, 2017), determinants of the segment profit variation (Bestari & Siregar, 2012; Wahyudi & Widaningsih, 2016), as well as the determinants and the impact on the cost of equity capital (Muhammad & Siregar, 2014; Abbas, Habbe, & Pontoh, 2015). Two studies related to the disclosure of segments to the cost of equity capital experienced results that are still inconclusive. Overseas research such as Krabbenborg (2012), Saini & Hermann (2012), and Semenenko & Yoo (2012) also find that the quality of segment disclosure negatively impacts the cost of equity capital.

The previous description provides findings that both earning quality and segment disclosure/reporting can reduce the cost of capital (Krabbenborg, 2012; Saini & Hermann, 2012; Semenenko & Yoo, 2012; Barth, Konchitchki, & Landsman, 2013; Muhammad & Siregar, 2014; Triningtyas & Siregar, 2014; Abbas, Habbe, & Pontoh, 2015; Persakis & Iatidris, 2015; Lahaya, 2017) although some studies have not found these results (Muhammad & Siregar, 2014; Mulyati, 2017). The evidence indicates that the information can be used jointly or used interchangeably by the investor. Segment disclosure is a detail performance report of each segment owned by the company. As for earning reported on the income statement is accumulated from company segments. It supports the argument that if the company report more is eligible, it also will disclose segment reporting more transparent and detail. Thus, the prior findings indicate that there are relationships between the earning quality and segment disclosure quality in affecting the cost of equity capital.

Francis, Nanda, & Olsson (2008) study on the effect of complementary or substitution of earnings quality and disclosure in decreasing the cost of equity capital. In this study, they use voluntary disclosures from Botosan (1997) research. Their results

suggest that voluntary disclosure has a complementary effect on earnings quality and jointly lowers the cost of equity capital. From the results of the study, it is expected that segments disclosure also has a complementary with the quality of earnings in decreasing the cost of equity capital. Although standards regulate segment disclosures, some researchers find that companies are still diverse in disclosing this segment's information.

Blanco, Lara, & Tribo (2014) found that earning quality influence segment disclosure. That is, if the earning quality affects the level of disclosure segment, while both affect the decreasing in the cost of equity. Its relationship allows that there is a simultaneous effect both of them in affecting the cost of equity. Based on the description findings, this study intends to investigate the relationship between earnings quality and segment disclosure level to lower the cost of equity capital.

The previous evidence and the limited study of segment reporting in Indonesian companies have given the motivation to continue the study. Sanjaya & Barus (2017) conclude that the cost of capital was lower for after IFRS adoption. Their finding implicates that PSAK 05 implementation will also reduce of cost of equity capital. But, according to Muhammad & Siregar's research (2014) manufacturing companies in Indonesia still do not all implement segment disclosures as regulated by PSAK 5 Operating Segment (Revised 2009). PSAK 5 Operating Segment (Revised 2009) is the result of the adoption of IFRS 8 operating segment. The study used the period before and when applied PSAK 5 Operating Segment (Revised 2009). So that further research is needed to answer the non-influence of segment disclosures on the cost of equity capital. The link between the uses of this two information as stated by Brown & Hillegeist (2009), this study intends to answer whether investors use quality earnings information and segment disclosure so that it will reduce the cost of equity capital in Indonesian manufacturing companies. Indonesia, in general, found

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that the higher the cost of capital in a company, the impact is significant enough for investment, where at least companies make a public offering of shares, and the low activity of companies to raise funds (Indayani & Mutia, 2013).

The agency theory arises because of the separation of ownership by the principal and the management by the agent of an enterprise (Fama & Jensen, 1983). The agency problem may be arisen because of differences in individual interests between them (Jensen & Meckling, 1976). It is under one of the assumptions in which humans have the property to be more self-interested than others (self-interest). It will make the agent does not always do the best for the principal interest (Jensen & Meckling, 1976).

The concept of agency theory describes that the owner bears the agency's cost of supervision; and the agent must issue a bonding expenditure which ensures that his actions do not harm the owner and residual loss if the agent's decision is not following the principal (Fama & Jensen, 1983). Principal supervision could be done with the access of financial and non-financial information of the company. The more transparent the information will provide the easier oversee and supervision.

However, agents that have access to the information do not always disclose the details of the company's information to the owner/investor that resulting in imbalance information or referred to as information asymmetry. According to Scott (2012), two kinds of information asymmetry is, first, the adverse selection of the condition of the agent has more information than the principal or external parties. Second is the moral hazard is the condition of the agent can freely do things that may violate the contract without being noticed by the principal.

For reducing information asymmetry, Healy & Palepu (2000) says needing regulation to disclose private information. Disclosures are additional information that complements the financial statements and can inform more details. Thus, investors can

access information easily and cheaply that it will make lower the cost of equity capital for the company. Brown & Hillegeist (2009) found that the level of disclosure quality decreases information asymmetry. Companies can provide additional information through more detailed disclosure, not just main reports. Segment information contributes to providing information on the distribution of earnings, both product and geographically diversified.

The standard regulates segment information in the Statement of Financial Accounting Standards (Indonesian SFAS, as known by PSAK) 5: Segment Operations (Revised 2009) which revised PSAK 5: Segment Reporting (Revised 2000). PSAK 5 Segment Report (2000) adopts SFAS 131 (from US GAAP). While PSAK 5 Segment Operations (Revised 2009) adopted IFRS 8 Segment Operation. One of the revised points of PSAK 5 (Revised 2009) is the reporting of activities that generate revenue and expenses as well as segment assets and liabilities. There is also a reconciliation of total revenues, profits or total profits or losses, assets, liabilities, and other material elements between segments and entities (PSAK 5, 2009). Segment classifying is based on the similarity characteristics of the nature of the product and service, the nature of the production process, the type or group of customers, the method for the distribution of products and services, if applicable the nature of the regulatory environment, e.g. banking, insurance, or public utilities (paragraph 12). The classification uses both quantitative and qualitative (principle based) threshold rules.

More, PSAK 5 (Revised 2009) also provides for the definition of an operating segment based on an entity component that is directly involved in obtaining revenue and expenses. It means that the head office which is the administrative office without generating revenue is not formed and reported by operating segment (Paragraph 60). The operational decision makers regularly review the results of the operations, as well as there is disclosure of financial information.

Based on the PSAK, it can be concluded that the decision to present and divide a segment depends on the management that may have different intentions. There will be differences between companies with signaling motivation and the consideration of proprietary cost theory. Besides, the resulting information viewed from the entity level can be differentiated into information about products/services and/or geographic areas as well as key customers. Segregation of product and geographical segments can provide additional information for analysts, investors and potential investors.

Segment information describes the diversification strategy. Chen & Zhang (2003) argue that segment data offers information on investment opportunities between segments due to different levels of profit and growth potential across segments. They explained that segment reporting presents information on profitability, risk, growth characteristics different between segments that could not be identified from the consolidated report. Thus, the company also does not longer hide the income statement of the segment that suffered losses. Chen & Zhang (2003) also add the explanation that segment reporting gives incremental value with inter-segment profit divergences.

Segment disclosure is considered to reduce information asymmetry because it reports in detail of the revenue and expense information of each segment to investors. Saini & Hermann (2012) find evidence that segment disclosure level decreases information asymmetry. Thus, segment reporting is considered to reduce the cost of capital. Abbas, Habbe, & Pontoh (2015) find evidence that segment quality decreases the cost of equity capital in public companies in Indonesia. Previously, Muhammad & Siregar (2014) using different measurements, found no evidence of segment disclosure relationship and equity capital cost. The inconclusive evidence from Indonesian company gives the other researchers to continue the exploration of the relationship.

The financial information of the company can be used if it is qualified. A conceptual framework

of the financial statements states that the financial statements may be used when they have relevance and reliability information. Both of them determine the quality of information. Relevance and reliability are the fundamental of characteristic qualitative of the information. Dechow & Schrand (2004) defines earning quality as a measure of whether earnings reported reflecting the firm's performance. When a company provides a good profit, it can be used in decision making, for example for investment activities.

Information quality has been investigated because profit is a critical element in investment analysis. Francis et al. (2005) find that good accrual quality will reduce the risk of information that will ultimately lower the cost of equity capital. Furthermore, Gray, Koh, & Tong (2009) continue the study of Francis, Nanda, & Olsson (2008) by taking different the sample. The results of Gray, Koh, & Tong (2009) support the research of Francis, Nanda, & Olsson (2008). Triningtyas & Siregar (2014) also find evidence in Indonesia that the accrual quality (the proxy of earnings quality) affects the cost of equity capital.

The general purpose of this research is to know the relationship between the segment disclosure level and earning quality in decreasing equity capital cost. The specific purpose of the research is, firstly to know the role of earnings quality in influencing segment disclosure level. Secondly, to know the impact of the segment disclosure level on the cost of equity capital. The third objective is to know the relationship between earnings quality and the segment disclosure level in influencing the cost of equity capital.

This study is expected to provide new evidence how the usage of both information by investors, that is the evidence of the relationship between earning quality and segment disclosure level in affecting the cost of equity capital. Thus, the company can pay attention to segment disclosure and report by providing more detailed information because of

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it will impact back to the company, i.e., the declining in the cost of equity capital. Likewise, investors can use the quality segment and profit information for their investment analysis. The study is also expected to provide evidence of compliance with PSAK 5 Operating Segment (Revised 2009) which is the adoption of IFRS 8 and its impact on the decrease in equity capital costs. Also, this study can also prove the existence of endogenous levels of segment disclosure.

### HYPOTHESES DEVELOPMENT

Previous research suggests that information quality is an exogenous variable concerning voluntary disclosure (Francis, Nanda, & Olsson, 2008). Francis, Nanda, & Olsson (2008) also add that manager intention in providing quality information influences with the decision to disclose information. Thus, they also emphasize that disclosure levels are endogenous variables. Segment disclosure is a mandatory type of disclosure that arranged by the standard. However, in decision making to disclose, it is influenced by management considerations (Nichols & Street, 2007). The manager intentions may influence the earning quality. The evidence indicates that segment disclosure is also an endogenous variable that is influenced by the quality of information.

Wang et al. (2011) and Blanco, Lara, & Tribo (2014) state that segment disclosure reduces information asymmetry and agency costs. On the other hand, earning quality also decreases information asymmetry and are considered to represent information asymmetry (Francis, Nanda, & Olsson, 2008; Blanco, Lara, & Tribo, 2014). Therefore, when the earnings quality is better, the company is not likely to hide the information and will reveal more details of company information.

While there is a possibility of proprietary cost in disclosing segment information, the company has a desire to give signaling with a detailed disclosure of its business unit's line. If the company commit to

reporting qualified earning with the little discretion, the companies could increase the segment disclosure as a signal to investors. Segment disclosure decisions are not only due to changes in standards and company characteristics (Lucchese & Carlo, 2012; Pardal & Morais, 2012; Saarilouma, 2013; Ibrahim, 2014), but also manager's policies (Abbas, Habbe, & Pontoh, 2015). You (2012) and Lail, Thomas, & Winterbotham (2013) stated that the quality of segment disclosure could be discretion by managers because of changes in segment aggressiveness, transfer of loads and other changes that are not visible. Therefore, segment disclosure depends on the high level of discretion by the manager. Based on the explanation, the following is the Hypotheses 1:  
 $H_1$ : earning quality influence positively on segment disclosure level

Segment disclosure is mandatory. Nevertheless, the 2010 Reports on the Observance of Standards and Codes (ROSC) of Indonesia indicates that the company has not disclosed segment information entirely following the standards (Muhammad & Siregar, 2014). In Indonesia, the report is supported by research by Muhammad & Siregar (2014) which find that the average disclosure level of manufacturing companies listed on BEI (2010-2011) amounted to 65 percent. This figure indicates that although regulated, not all companies disclose following PSAK 5.

The 2010 Reports on the Observation of Standards and Codes (ROSC) of Indonesia shows that the company has not disclosed segment information fully in accordance with the standards (Muhammad & Siregar, 2014). In Indonesia, the report is supported by Muhammad & Siregar (2014) research which found the average disclosure level of manufacturing companies listed on the Indonesia Stock Exchange 2010-2011 amounted to 65 percent. This figure adds the evidence that some companies do not report detailed information of segment disclosure.

Shehata (2014) describes that disclosure is a signaling tool for assessing companies. A proper disclosure level will inform the user transparently that resulting in minimizing of the information asymmetry. Thus, the investor can decide without the expensive cost. If investors get easy access to information, it will efficiently conduct transactions that will increase the value and lower the cost of equity capital. Botosan (1997) is a preliminary researcher who finds that voluntary disclosure from the companies with little analyst following decreases the cost of equity capital. This finding indicates that investors will rely on disclosure information in addition to information other than the items available in the financial statements.

Although prior research is still not conclusive, it is possible that the segment disclosure level may affect the declining in the cost of equity capital. Moreover, Brown & Hillegeist (2009) state that segment information is one of three crucial informations used by investors in making investment decisions. Pelaez, Lara, & Gine (2009), Krabbenborg (2012), Saini & Hermann (2012), Semenenko & Yoo (2012), and Abbas, Habbe, & Pontoh (2015) also find that segment disclosure is proved to lower the cost of equity capital.

As stated by Abbas, Habbe, & Pontoh (2015), the relationship between segment disclosure and cost of equity capital is explained by agency theory framework. High level of segment disclosure quality will decrease information asymmetry. Higher disclosure of segments will further assist investors in analyzing the risks of economic investment. Investors more easily make securities transactions and investments. The high demand for securities will lead to an increase in stock prices that indicate a decrease in the cost of equity capital. Thus, it could be hypothesized, that:

H<sub>2</sub>: segment disclosure level influences negatively on the cost of equity capital

Francis, Nanda, & Olsson (2008) reveal there are two views on the relationship between earn-

ings quality and voluntary disclosure. First, information asymmetry between the insider and the shareholder causes the demand for disclosure information and gives the company incentives to disclose as the added value of the information is greater (Verrecchia, 1983). The implication is a company with poor (good) earnings quality will publish more (a little) disclosures due to information asymmetry between firms and high (low) investors. Thus, in these circumstances, the relationship between earnings quality and disclosure is considered a substitution relationship.

The second opinion of Francis, Nanda, & Olsson (2008) that improved information quality provides an incentive for managers to provide as much information through disclosure (Verrecchia, 1983). Heitzman, Wasley, & Zimmerman (2010) also state that disclosure decisions depend on the materiality and incentives the company receives. In this view, the companies with poor (good) earnings quality will issue fewer (more) disclosures as investors treat such disclosure as less (more) credible information. The relationship of them is considered a complementary relationship.

Both opinions may also apply to the relationship of earnings quality and segment disclosure. Companies require segment disclosures as standards rule them. However, managers still have the option to disclose segments, for example in quantitative restrictions of forming the segment that is 10 percent of the total revenue of all operating segments leaving options. If they do not meet the required limit, the segment may be disclosed with the consideration that the manager believes the information is beneficial to external users. The consideration of managers effects the variation of forming and disclosing segment operation. Thus, better segment disclosures and reporting complement the earning quality in affecting the decrease in the cost of equity capital. In addition, the basic formation of the segment also depends on the company's decision. It may also depend on how the company manages their earning.

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In effect the cost of equity capital, these two variables can lower the cost of equity capital even though the results are still not conclusive, especially for segment disclosure. Francis, Nanda, & Olsson (2008) state that earning quality depends on voluntary disclosure affecting the cost of equity capital. It means that the effect of earnings quality on disclosure is a first-order effect, while the disclosure level is a second order effect in affecting the decrease in equity capital cost. So, the impact of earnings quality on the cost of equity capital can be through the segment disclosure level as a first-order effect that is also influenced by the quality of earnings. In this case, the existence of the disclosure level and the earning quality will have simultaneous (complimentary) or complementary effects on the decreasing in the cost of equity capital. The impact of the disclosure level in decreasing the cost of equity capital is triggered or influenced by good earnings quality. Based on the description, we formulate a hypothesis as follows:

H<sub>3</sub>: earning quality influences indirectly on the cost of equity capital using segment disclosure level as mediating variable

### METHODS

The data in this research is secondary data. The accounting and capital market data are from Thomson Reuters (Datastream), and the data for segment disclosures comes from the company's financial statements. Data of the sample research determination are from the website of the Indonesia Stock Exchange (BEI).

The sample in this study is a manufacturing company listed on the Indonesia Stock Exchange (IDX) with the period 2011-2013. The object of research is a manufacturing company because manufacturing companies process raw materials into finished materials that would often produce new products. The new product has resulted in diversified in different operating segments. The manufacturing

company has also been selected for the research because it is an industry with a large number of companies. Selection sample in one industry is because of similarities between the accounts and type of business that will produce in the similarity of properties in the disclosure segment. What we start of 2011 is because it is the first year of SFAS 5 (Revised 2009) effectively implemented. Although the study period 2011-2013, the research data requires the period  $t + 1$ . The research conducted in 2014 is the last year of data availability and also that PSAK 05 re-revised in 2015.

The general hypothesis of this study is to get evidence on whether the complementary effect between the quality of earnings and the disclosure of segments in reducing the cost of capital. To answer the hypothesis, we use two-stage least square (TSLS) for mediating variable. The model TLSL also refers to Francis, Nanda, & Olsson (2008) that investigating using a mediating model with TLSL. However, we need several research models to answer the specific hypotheses as stated in the previous section. The followings are model 1 for answering H<sub>1</sub>; model 2 for answering H<sub>2</sub>, and model 3 is the second stage-order model that continuing the first stage model (model 1):

$$SEGDISC_{it} = \alpha_0 + \alpha_1 EQ_{it} + \alpha_2 AUD_{it} + \alpha_3 SIZE_{it} + \alpha_4 AGE_{it} + \alpha_5 LEV_{it} + \alpha_6 LIQ_{it} + \varepsilon_{it} \quad (1)$$

$$COEC_{it} = \beta_0 + \beta_1 SEGDISC_{it} + \beta_2 SIZE_{it} + \beta_3 ROA_{it} + \beta_4 GROWTH_{it} + \beta_5 MTBV_{it} + \varepsilon_{it} \quad (2)$$

$$COEC_{it} = \gamma_0 + \gamma_1 \widehat{SEGDISC}_{it} + \gamma_2 EQ_{it} + \gamma_3 SIZE_{it} + \gamma_4 ROA_{it} + \alpha_5 GROWTH_{it} + \gamma_6 MTBV_{it} + \varepsilon_{it} \quad (3)$$

#### Where:

SEGDISC : segment disclosure

EQ : earning quality, measured by Absolute of Accrual Quality (ABSAQ) and Absolute of Abnormal Accrual (ABSAA)



- COEC : cost of equity capital, measured by adjusted-EP Ratio
- SIZE : size of the firm, measured by ln total asset
- AGE : age of firm, measured how longlisted
- LEV : leverage, measured by total debt/ total equity
- LIQ : liquidity, measured by the current ratio
- ROA : profitability, measured by return on asset
- GROWTH: growth, measured by growth of net sales
- MTBV : market to book value

Segment disclosures are standardized by disclosing them in notes to financial statements. Companies may report income statements, assets and liabilities based on products, geographic areas and key customers (PSAK 5, 2009). In addition, the company should provide consideration and judgment on the creation of segments, accounting policies and reconcile those reports.

Segment disclosure is measured by the segment disclosure checklist based on PSAK 5 Operating Segment (Revised 2009). For each item of the checklist is assigned of 1 if the firm expressly discloses and 0 if otherwise. N/A or Not Applicable are given the item that is not be applied to the company. In addition, if any item information is reported but not regulated by PSAK 5 Operating Segment (Revised 2009), it is considered voluntary disclosure and given a value of 1 for each item. The scoring is got by divided score value of the company by total required checklist.

Earning Quality is the profit that has the high value added by the investor for decision making. If the discretion of the manager is minimal, the reported earnings will describe the actual economic conditions. Previous research has formulated measures of earnings quality, including using the accrual quality and the absence of earnings management.

This study uses two measures of earnings quality. First, which is also used by Francis, Nanda, & Olsson (2008) and Blanco, Lara, & Tribo (2014),

are the accrual quality (ABSAQ), developed by Dechow & Dichev (2002) and modified by McNichols (2002). Here is a model of the accrual quality equation:

$$\frac{TCA_{i,t}}{Asset_{i,t}} = \alpha_{0,1} + \alpha_{1,i} \frac{CFO_{i,t-1}}{Asset_{i,t}} + \alpha_{2,i} \frac{CFO_{i,t}}{Asset_{i,t}} + \alpha_{3,i} \frac{CFO_{i,t+1}}{Asset_{i,t}} + \alpha_{4,1} \frac{\Delta REV_{i,t}}{Asset_{i,t}} + \alpha_{5,1} \frac{PPE_{i,t}}{Asset_{i,t}} + \varepsilon_{i,t} \tag{4}$$

The residual value produced by a model (4) is variables which cannot be explained by the independent variables. The accrual will be more qualified if the residual value is a smaller value. So, the earning quality of the research is the inverted form of the residual value if the residue gets a smaller value; the earning will be better quality. The study also uses the absolute value of accrual quality because the study does not consider whether increasing or decreasing earnings management motivation.

The second measurement is the Absolut Abnormal Accrual (ABSAA) which is the proxy of earnings management. The study uses Jones's (1991) model. The residual of the Jones model equation shows the earning quality, smaller of accrual (absolute) produces better earning quality. Here is earning management by Jones's (1991) model:

$$\frac{TA_{i,t}}{Asset_{i,t-1}} = \alpha_{1,i} \frac{1}{Asset_{i,t-1}} + \alpha_{2,i} \frac{\Delta REV_{i,t}}{Asset_{i,t-1}} + \alpha_{3,1} \frac{PPE_{i,t}}{Asset_{i,t-1}} + \varepsilon_{i,t} \tag{5}$$

- TCA : total current accrual, measured by  $\Delta CA_{it} - \Delta CL_{it} - \Delta Cash_{it} + \Delta STDEBT_{it}$
- TA : total accrual, measured by  $\Delta CA_{it} - \Delta CL_{it} - \Delta Cash_{it} + \Delta STDEBT_{it} - DEPN_{it}$
- Asset : average of total asset
- Asset<sub>t-1</sub> : total asset t-1
- CFO : cash flow from operating
- ΔCA : delta current asset

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$\Delta$ CL : delta current liability  
 $\Delta$ Cash : delta cash  
 $\Delta$ STDEBT: delta debt for long term-debt  
 DEPN : depreciation and amortization expenses  
 $\Delta$ Rev : delta revenue  
 PPE : property, plant, equipment (gross)

Cost of equity capital of the research measured by Industry-Adjusted E/P Ratio (Muhammad & Siregar, 2014). Measuring Industry-Adjusted E/P Ratio is first, by determining the PER (price-earnings ratio) of companies that available in Datastream. Second, determine the EP (Earning-Price) value by dividing PER by number 1. Third, the EP value of each firm is reduced by the median of the industry EP for each year. The higher the Industry-Adjusted E/P Ratio shows, the higher the cost of equity capital of a company.

We did not take all the control variables in the Blanco, Lara, & Tribo (2014) because the availability of data in Indonesia adjusts it and also research findings of Indonesia companies. This study uses control variables as in equations (1), (2) and (3), namely: SIZE, is the size of the company measured from the natural logarithm of the total value of the company's assets; AGE, the age of the company, is from the age of listed companies on the exchange; LEV, leverage which is the concentration of debt in the firm's capital structure (Jalila & Devi,

2012). The leverage used is the debt to equity ratio (DER); LIQ, is the company's liquidity that shows the company's strength from its ability to settle short-term liabilities with existing short-term assets. LIQ measurement with current ratio; ROA, Return on Asset, is a proxy of company profitability (Andre, Filip, & Moldovon, 2013); GROWTH, is the company's growth rate as measured by sales growth divided by last year's sales; MTBV, market to book value is the value of the company's stock (Dhaliwal et al., 2011; Muhammad & Siregar, 2014; Abbas, Habbe, & Pontoh, 2015).

### RESULTS

Sampling method uses purposive sampling based on the criteria of manufacturing companies listed on the BEI in 2011-2013. Second criteria are the company reported the multi-segment information. The third is the company has a PER (Price Earnings Ratio) data. The fourth is the company has no negative equity value. The last is companies that have accounting data required for research variables.

Table 1 presents the results of the sample selection. Manufacturing companies listed during 2011–2013 are 399 firms-years. After the sample selection process, the final result obtains 242 firms-years. The sample represents 60.65 percent of the populations.

**Table 1.** Sample Selection Process

Sample Selection	Firms-Years
Manufacturing companies listed during 2011-2013	399
Companies that do not have segment information or a single segment or financial statement is available (2011 - 2013)	(51)
Companies do not have PER data (2011 - 2013)	(65)
Companies that have negative equity	(3)
Companies that their accounting information is not completed (2011 - 2013)	(41)
<b>Final Sample (unbalanced, firm-year)</b>	<b>242</b>

Statistic descriptive is presented in Table 2 for regression of earnings quality variables and table 3 for variables of main models. Statistic description amount in Table 2 has been winsorized for all variables with double of standard deviation. The three variables of cash flow have an average that is not much different, and the average the cash flow of the company grows periodically.

In Table 3, the segment disclosure rate (SEGDISC) has an average of 0.46470, indicating that the compliance level of the sample company to PSAK 5 is 46.47 percent or less than 50 percent. It is possible because companies are more likely to follow

OJK rules on segment reports that are not as detailed in PSAK (Bapepam, VIII.G.7 regulations on financial statements). A standard deviation of ABSAQ (earnings quality) is better than ABSAA. It shows that ABSAQ measurement is better in the research. Control variables such as SIZE, LEV, LIQ, ROA, and MTBV have a wide standard deviation. These results indicate that the range between large firms, large corporate capital structures of debt proportions, low-value stocks, looks much different. However, the models are still normally distributed. KAP BIG 4 (AUD Variable) of the sample companies also does not reach 50 percent, only 41.74 percent.

**Table 2.** Descriptive Statistics of Earning Quality Variables

Descriptive Statistics for Accrual Quality Variables (Winsorizing Data)							
Variable	N	Mean	Sd	Min	P50	Max	Skewness
TCA	358	0.03795	0.13892	-0.44832	0.04412	0.49217	-0.45220
CFOt-1	358	0.06278	0.10147	-0.20807	0.05126	0.31927	0.36773
CFO	358	0.06863	0.11130	-0.20103	0.06056	0.34922	0.39747
CFOt+1	358	0.07618	0.12207	-0.21590	0.06280	0.37582	0.28617
DeltREV	358	0.15722	0.18785	-0.26000	0.13063	0.69123	0.72468
PPE	358	0.76373	0.40634	0.04773	0.71009	2.01263	0.81581
Descriptive Statistics for Abnormal Accrual Variables (Winsorizing Data)							
Variable	N	Mean	Sd	Min	P50	Max	Skewness
TA	363	0.01047	0.15788	-0.44383	0.01138	0.56210	0.27627
A	363	0.00000	0.00000	0.00000	0.00000	0.00000	1.65685
DeltREV	363	0.17897	0.21436	-0.28802	0.14479	0.79896	0.87762
PPE	363	0.82927	0.42842	0.04357	0.77174	1.94622	0.57300

**Table 3.** Descriptive Statistics of Hypotheses Testing Variables

Variable	N	Mean	Sd	Min	Median	Max
COEC	242	0.02880	0.14190	-0.07846	0.00092	0.92958
SEGDISC	242	0.46470	0.18137	0.11429	0.50000	0.77143
ABSAA	242	0.09408	0.10494	0.00095	0.05815	0.53337
ABSAQ	242	0.07487	0.09676	0.00031	0.03659	0.53292
SIZE	242	21.30717	1.66310	17.96303	21.08677	26.07752
AUD	242	0.41736	0.49414	0	0	1
AGE	242	17.04132	6.67863	1	20	31
LEV	242	61.01265	75.83832	0.00000	40.33638	596.89000
LIQ	242	3.32033	15.86656	0.58380	1.66850	247.44400
ROA	242	9.50649	7.72879	-13.58000	7.63500	46.32000
GROWTH	242	0.16470	0.19065	-0.57659	0.14428	1.48547
MTBV	242	2.55673	4.82323	0.18285	1.24887	46.62640

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### Univariate Analysis

Based on the univariate correlation as shown in 4, it is realised that the two earnings quality variables do not affect the cost of equity capital. In contrast to earnings quality, segment disclosure variables, both SEGDISC first order and fitted results, significantly lower the cost of equity capital. The results also show that the value of fitted influenced by earnings quality has a stronger influence than non-fitted. It indicates that there is simultaneous influence between segment disclosure and earnings quality to decrease of cost of equity capital. The relationship of earnings quality and segment disclosure level is also significant in the univariate test. It means that firms with better earnings quality will reveal much better segment information

Table 4 also shows the correlation between other explanatory variables. However, according to the VIF test for multivariate, the results show that the model does not contain multicollinearity. Table 4 also explained that the variables of all control variables have a significant effect on the decrease in the cost of equity capital, except growth which increases the cost of equity capital. The result is reasonable because when companies are growing, they need more funding, so it will be easier to issue shares, even at a discount.

### Hypothesis Testing (Multivariate Analysis)

Univariate testing is an indication that gives early evidence. For more details, here is a multivariate test for the three hypotheses presented earlier. Table 5 presents the regression result of the relationship. This result is a generalized least square (GLS) regression because the model contains heteroscedastic and autocorrelation. The model has a normally distributed residue and VIF > 10 values indicating free from multicollinearity. The GLS model fixes the problem of classical assumptions by not changing the coefficients so that the resulting fitted value is also unchanged. The fitted value of this equation will be used for second stage order regression.

The first column (after column 'prediction') is a basic model that only provides control variables only, and then followed by the regression model with ABSAQ and ABSAA model. The regression results show the model having Adjusted-R-Square respectively of 25.45 percent, 26.55 percent, 26.61 percent, which means that the model can be explained by independent variables respectively of 25.45 percent, 26 percent, 55 percent, 26.61 percent, the rest explained by other variables outside the model. The adding of the earnings quality variable can increase Adj-R-square, it indicates that the vari-

**Table 4.** Correlation of the Variables

	COEC	fitt_sdis cl1	fitt_sdis cl2	SEGDIS CL	ABSA Q	ABSA A	SIZE	ROA	GROWTH	MTBV
COEC	1.00									
Fit_SDISC1	-0.23***	1.00								
Fit_SDISC2	-0.23***	0.99***	1.00							
SEGDISCL	-0.20**	0.53***	0.53***	1.00						
ABSAQ	-0.02	-0.39***	-0.36***	-0.21**	1.00					
ABSAA	0.01	-0.39***	-0.42***	-0.22***	0.87***	1.00				
SIZE	-0.20**	0.85***	0.85***	0.45***	-0.18**	-0.17**	1.00			
ROA	-0.15**	0.30***	0.30***	0.23***	0.14**	0.12*	0.22***	1.00		
GROWTH	0.17**	0.00	0.00	0.04	0.03	0.05	0.02	0.13**		
MTBV	-0.16**	0.27***	0.26***	0.19**	0.03	0.06	0.25***	0.69***	0.05	1.00

\* p<0.1, \*\* p<0.05, \*\*\* p<0.001

able is a good explanation variable of the model. The p-value of 0.000 shows the fit model and well used for estimation.

Both the proxies of earning quality, (ABSAQ) and (ABSAA), show that the p-value of 0.0300 and 0.0270 that is smaller than a significant value of 5 percent (p-value < 0.05). It means that earning quality influence statistically segment disclosure. The negative coefficient results are proved the prediction that earning management affects negatively segment disclosure. It means that earning quality positively affects the level of disclosure segment because earning quality is inverse from earning management.

The second test is the relationship between the segment disclosure level and the cost of equity capital. The test is performed before testing with the second-order condition. The first column of Table 6 (after the prediction column) shows the results of Hypothesis 2. The test shows that Adj-R-Square is 8.28 percent, which indicates that the model is explained by an independent variable of 8.28 percent only and other variables outside the model explain the rest. This result is higher than the result of Muhammad & Siregar (2014) of 4.19 percent for

the full sample and similar result for data that eliminates the negative beta.

The difference between this research and the previous is an additional control variable of growth. It means that the addition of the GROWTH variable is considered appropriate in this study. The model also has a better fit which is indicated by a p-value of 0.000. SEGDISC variable shows a p-value of 0.0600 that is smaller than a significant level of 10 percent, with a negative coefficient. The result indicates that the segment disclosure level can lower the cost of equity capital.

The next column in Table 6 is the result of model 3.1 and model 3.2. They are the second-order condition tests. The value of adj-R-square is 8.52 percent and 8.24 percent respectively for model 3.1 and 3.2. The Fit\_Sdisc1 and Fit\_sdisc2 results show the p-value values of 0.030 and 0.035, respectively, smaller than the significant level of 5 percent with a negative coefficient. It means that disclosure of segments statistically can lower the cost of equity capital with earning quality as a mediation variable. These results show a more significant result than the results in the equation model (2).

**Table 5.** The Result of the Relationship between Earning Quality and Segment Disclosure Level

$SEGDISC_{it} = \alpha_0 + \alpha_1 EQ_{it} + \alpha_2 AUD_{it} + \alpha_3 SIZE_{it} + \alpha_4 AGE_{it} + \alpha_5 LEV_{it} + \alpha_6 LIQ_{it} + \varepsilon_{it}$							
Variable	Prediction	Basic Model		Model (ABSAQ)		Model (ABSAA)	
		Coef	P-Value	Coef	P-Value	Coef	P-Value
ABSAQ	-			-0.2250	0.0300		
ABSAA	-					-0.2121	0.0270
SIZE	+	0.0446	0.0000	0.0426	0.0000	0.0428	0.0000
AUD	+	0.0448	0.0550	0.0427	0.0650	0.0415	0.0730
AGE	+	0.0011	0.4690	0.0009	0.5610	0.0009	0.5510
LEV	+	-0.0004	0.0010	-0.0004	0.0010	-0.0004	0.0020
LIQ	+	-0.0011	0.0720	-0.0011	0.0690	-0.0011	0.0810
Kons		-0.4917	0.0000	-0.4285	0.0030	-0.4298	0.0030
R-Sq			27.00%		28.38%		28.44%
Adj-R-Sq			25.45%		26.55%		26.61%
P-Value			0.000		0.000		0.000

SEG DISC = segment disclosure; ABSAQ= Absolut Accrual Quality; ABSAA= Absolut Abnormal Accrual (ABSAA); AUD= audit quality; SIZE= size of firm; AGE= Age of firm; LEV= Leverage; LIQ= Liquidity

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SEG DISC = Segment Disclosure; ABSAQ= Absolut Accrual Quality; ABSAQ= Absolut Abnormal Accrual (ABSAA); Fit\_SDISC1 = fitted result of first order regression (for mediation testing) of ABSAQ; Fit\_SDISC2= fitted result of first order regression (for mediation testing) of ABSAA; SIZE= size of firm; ROA= return on asset; GROWTH= growth of sales; MTB= market to book value.

### DISCUSSION

Hypothesis 1 stated that earning quality positively affects the level of disclosure segment. The influence may indicate a complementary effect between the two information (Francis, Nanda, & Olsson, 2008). The result finds that earning quality positively affects the level of disclosure segment because earning quality is inverse from earning management.

The result is consistent with the results of Blanco, Lara, & Tribo (2014) findings in US companies that earnings quality determines the level of disclosure of segments. If the earning is quality, it shows that the company also provides segment information better to users. These results support the opinions of previous researchers who argued that firms with good earnings quality would provide more disclosure information. Verrecchia (1983) also states that the increased quality of information encourages companies to disclose better because they will accept more incentives. Francis, Nanda, & Olsson (2008) also asserted that when investors have a high precision of earnings information, they will use other information. The company will be self-confident that the segment information disclosed will have an impact and incentive for the company.

A qualified earning is a representation of a minimum of information asymmetry. The results

**Table 6.** The result of Relationship Earning Quality, Segment Disclosure Level, and Cost of Equity Capital

$$COEC_{it} = \beta_0 + \beta_1 SEGDISC_{it} + \beta_2 SIZE_{it} + \beta_3 ROA_{it} + \beta_4 GROWTH_{it} + \beta_5 MTBV_{it} + \varepsilon_{it}$$

$$COEC_{it} = \gamma_0 + \gamma_1 SEGDISC_{it} + \gamma_2 EQ_{it} + \gamma_3 SIZE_{it} + \gamma_4 ROA_{it} + \alpha_5 GROWTH_{it} + \gamma_6 MTBV_{it} + \varepsilon_{it}$$

Variable	Prediction	Model (2.1)		Model (3.1)		Model (3.2)	
		Coef	P-Value	Coef	P-Value	Coef	P-Value
SEGDISC	-	-0.1018	0.0600				
Fit_SDISC1	-			-0.4479	0.0300		
ABSAQ	-			-0.1928	0.0770		
Fit_SDISC2	-					-0.4575	0.0350
ABSAA	-					-0.1471	0.1620
SIZE	+	-0.0093	0.1180	0.0052	0.6290	0.0061	0.5790
ROA	+	-0.0014	0.3660	-0.0003	0.8370	-0.0005	0.7500
GROWTH	+	0.1411	0.0020	0.1327	0.0040	0.1332	0.0040
MTBV	+	-0.0019	0.4370	-0.0025	0.3190	-0.0023	0.3510
Kons		0.2688	0.0220	0.1289	0.4020	0.1134	0.4670
R-Sq			10.18%		10.80%		10.52%
Adj-R-Sq			8.28%		8.52%		8.24%
P-Value			0.0001		0.0001		0.0001

SEG DISC = Segment Disclosure; ABSAQ= Absolut Accrual Quality; ABSAQ= Absolut Abnormal Accrual (ABSAA); Fit\_SDISC1 = fitted result of first order regression (for mediation testing) of ABSAQ; Fit\_SDISC2= fitted result of first order regression (for mediation testing) of ABSAA; SIZE= size of firm; ROA= return on asset; GROWTH= growth of sales; MTB= market to book value.

prove that the segment disclosure level can minimize information asymmetry. It supports the previous findings by Wang et al. (2011), and Blanco, Lara, & Tribo (2014). The results show that the significant positives indicate that there is a complementary effect between the quality of earnings and the level of segment disclosure. It also supports Francis, Nanda, & Olsson (2008) that studied voluntary disclosure. Investors will use segment information to complement and clarify earnings information. This is in line with the purpose of the segment reporting providing detailed information that cannot be obtained from the consolidated financial statement (Chen & Zhang, 2003).

Five control variables are consistent across the three models. Firm size, audit firms, and firm age are consistent with previous researchers (Muhammad & Siregar, 2014; Blanco, Lara, & Tribo, 2014). Leverage and liquidity results are contrary to the prediction. It is possible that companies with high leverage and liquidity are the small companies that are still unable to provide detailed information to borrowers.

The second test is the relationship between the segment disclosure level and the cost of equity capital. This investigation re-examined the previous study with the same proxy that has been researched by Muhammad & Siregar (2014). They do not get evidence that segment disclosure influences the cost of equity capital.

This research finds that the segment disclosure level can lower the cost of equity capital. The finding supports the findings of Saini & Hermann (2012) who find that the segment disclosure decreases information asymmetry as well as capital costs. The results are same by Pelaez, Lara, & Gine (2009), Krabbenborg (2012), Semenenko & Yoo (2012) as well as Abbas, Habbe, & Pontoh (2015). As information asymmetry declines, it will encourage investors to invest as a result of reduced equity capital costs. Operating segment report that complies with PSAK 5 will help investors for proper

decision making, especially for their funding investment.

Although the result shows a marginal effect, firms can improve the segment disclosure to provide better information to users. It will be able to provide incentives for the company because based on statistical results proven to lower the cost of equity capital.

The third finding indicates that disclosure of segments statistically can lower the cost of equity capital with earning quality as a mediation variable. These results show a more significant result than the results in the equation model (2). The earnings quality variable experiences inconclusive results. Using proxy of absolute accrual, there is evidence that the earning quality of simultaneously with segment disclosure level can lower the cost of equity capital. Results for earning management proxies do not find any such evidence. Separate regression results without including segment level disclosure variables (not tabulated), earnings quality, both proxies, does not significantly affect the cost of equity capital.

The results show strong evidence of the role of segment information in clarifying the quality of corporate profits and also show that in addition to the complementary effect between them in decreasing in capital equity costs. In accordance with the opinion of Chen & Zhang (2003), segment reports provide detail information that is not obtained from profit and loss, consolidated assets and liabilities. When firms in more detail report segments, investors can analyze up to the business unit, making it possible to entrust their funds to the firm because it sees a profitable segment unit.

Second-order model of segment disclosure level is more powerful impact compared to first order regression model. The third result confirms that the segment disclosure level plays a significant role in illustrative the earning quality in lowering the

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cost of equity capital. The segment disclosure level is proven that as a mediating variable on the negative relationship of earnings quality and in equity capital costs. These results indicate that the segment disclosure level is an endogenous variable

### CONCLUSION AND SUGGESTION

#### Conclusion

The result shows that, firstly, earnings quality positively influences segment disclosure level. It indicates a complementary effect between them. Secondly, in contrast to previous research in Indonesia, this study found evidence that the higher level of disclosure segments effect more decreasing the cost of equity capital. The third result, with second stage model, finds that earnings quality can lower the cost of equity capital only if together with the segment disclosure level.

#### Suggestions

This study has the following suggestion for several parties. This study suggests to the standards board that segment information based on IFRS adoption has been reduced information asymmetry that will lower the cost of equity capital. This research suggests to investors that should use segment information in analyzing the company's business. This study indicates that companies should pay attention to segment information disclosure because it can provide incentives for companies that are lowering the cost of equity capital. For future study, the researcher may use the measurement of the cost of equity capital as proposed by Botosan (1997) and PEG from Easton. This study is not possible to use such measurements because it requires up to  $t + 4$ , while the beginning of the study period in 2011. Further research can add some control variables, such as corporate governance.

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