

## Effect of Earnings Quality Properties on The Performance of Companies: Empirical Evidence from South Africa

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### Info Articles

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### Abstract

**Objective:** This paper examines the effect of earnings quality properties on the performance of Johannesburg Stock Exchange (JSE) listed companies. The earnings quality properties considered include the accrual quality, conservatism, earnings persistence, earnings predictability and earnings smoothness. The five properties are examined individually as well as aggregately. Each property is further separated into its innate and discretionary components and the effect of each component on the company's performance is examined.

**Methodology:** The quantitative method and purposive sampling is used in this study. The sample consists of 800 observations obtained from 80 non-financial companies listed in the JSE during the period of 2009-2018. The performance is measured using the Return on Asset (ROA) and Tobin Q. The multilevel linear regression is used to test the formulated hypotheses.

**Results:** It was found that, for both measures of performance, each earnings quality property as well the aggregate earnings quality property influence the performance of companies. Some exceptions included the accrual quality, predictability and smoothness which were found not to be significantly related to Tobin Q. Furthermore, it was found that both the innate and discretionary components of earnings quality properties influence the performance of companies. However, the innate component had a greater impact on the performance of companies than the discretionary component.

**Implication:** The study will provide guidelines to investors and other capital market participants on which property of earnings could be used to assess the current performance of JSE listed companies and make prediction about their future performance. This in turn will assist in improving investors' resource allocation decisions and allow policy makers to develop policies that will lead to more transparent accounting information in order to promote efficiency of the capital market. In addition, the study will inform capital market participants on how managers' actions (discretionary component) and factors beyond the control of manager (innate component) affect the companies' performance.

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## INTRODUCTION

This paper examines the impact of five earnings quality properties, namely, accrual quality, conservatism, earnings smoothness, persistence and predictability, on the performance of the companies listed in the Johannesburg Stock Exchange (JSE). In fact, previous studies (Chan et al., 2006; Salerno, 2014) documented that reported earnings plays a vital role in the functioning of the capital market and earnings quality properties are factors that capture the capability of accounting data to represent faithfully a company's operations (Domingues et al., 2016). Understanding the relation between the factors that affect reported earnings and the performance of a company is fundamental to investors and others capital market participants. This may help to improve the way the capital market functions as well as the efficient allocation of resources and economic growth.

Several studies (Francis et al., 2004; Dichev, 2006; Salerno, 2014; Sodan, 2015) have indicated that financial reports provide relevant information that help capital market participants to make decisions. Furthermore, it is argued that users of financial reports rely on reported earnings more than any other item in the financial statements to make decisions (Francis et al., 2004; Chan et al., 2006), since earnings is seen as the most important indicator of the firm's performance.

Because the users of accounting information depend largely on earnings to make economic decisions, managers of companies may be tempted to manipulate earnings numbers in order to mislead the capital market participants (Chan et al., 2006; Domingues et al., 2016). Earnings manipulation is a deliberate alteration of financial reports with intend to distort accounting information. Earnings manipulation thus, lowers the quality of firm's reported earnings. Manager's motives for earnings manipulation include: a desire to hide firm's cash flow problems, inability to meet loan contractual agreement, and desire to fulfil the expectations of capital market (Lisboa and Kacharava, 2018; Persakis and Iatridis, 2015; Dechow et al., 2003). Examples of big companies that misrepresented earnings to deceive the capital market participants include Parmalat, Enron, Worldcom, more specifically in South Africa, Leisuren et and Fidentia (Chan et al., 2006; Smit, 2015). These financial scandals have raised concerns about the quality of the companies' reported earnings. The quality of reported earnings has thus become the focus of attention in accounting and finance research (Chan et al., 2006).

Researchers have developed several earnings properties to assess the quality of accounting information. However, no agreement has been reached within the earnings quality research community on how to choose the earnings properties. For some authors (Francis et al., 2004; Dechow et al., 2010), the research questions being examined should guide which earnings properties to choose; while others like (Perotti and Wagenhofer, 2014; Lyimo, 2014) believe that research questions should be addressed with a variety of earnings properties in order to obtain consistent results. In this paper five earnings properties including the accrual quality, persistence, predictability, smoothness and conservatism are used to answer the question of how do various properties of earnings quality affect the performance of the companies listed in the JSE? The reason is that each of these properties is unique and irreplaceable by any other property. In fact, it is argued that earnings properties are unrelated and that it would be useful to utilize several properties to evaluate a firm's reported earnings (Dechow et al., 2010; Gutierrez and Rodriguez, 2017).

Each of the five properties of earnings considered is driven by both the firm's business model and operating environment (innate component) and manager's action (discretionary component) (Athanasakou and Olsson, 2016; Francis et al., 2004); therefore, the study focuses on two dimensions. Firstly, each property is considered separately and the combined effects of these properties on the performance of companies are investigated. In order words, each property is considered as a whole, that is, without any separation of its components and its effect on performance is investigated. Furthermore, an aggregate earnings quality property is formed (Sodan et al., 2015) based on the five properties being investigated, to alleviate the measurement errors associated with the individual properties, and its effect on companies' performance is tested. The use of individual properties as well as the aggregate property allow for the reduction in the measurement errors and generalisation of the results in the South African (SA) context. Secondly, each property is separated into its innate and discretionary components and it is investigated how each component affect the performance of companies. Such partition is important because it provide insights on which factors (components) influence the most the performance of companies.

This study addresses some shortcomings of the current earnings quality research. In fact, although the literature on earnings quality research is abundant, studies that specifically focus on the association between earnings quality properties and the company's performance are few. In addition, most of related studies have examined earnings properties as a whole and have mainly used single earnings property to measure the quality of earnings (Gutierrez and Rodriguez, 2017). Furthermore, existing related studies have been conducted in developed nations and some Asian countries, where the capital market is

well organised compared to developing nations such as South Africa. Beside the above, the results achieved by the existing related studies were mixed. For instance, the study by Ayu and Ahmar (2013) found a positive relationship between accrual quality and the company's performance, whereas, Hejazi et al., (2014) found no relationship at all. Therefore, the results of these studies cannot be generalised. Apart from that, the quality of accounting information in a country is affected by a set of conventions such as the constitutional system, government regulations, ownership and capital structure, accounting standards and tax legislations. Each country has its own conventional setting; thus, the information on earnings changes according to different capital markets. Moreover, Dechow et al. (2010) and Dichev et al. (2013) reported that the earnings quality research had focused mainly on the earnings quality driven by reporting choice of managers (discretionary earnings quality) and has neglected earnings quality driven by the firm business models (innate earnings quality), although the quality of reported earnings is affected by both discretionary and innate earnings quality dimensions.

South African studies on earnings quality in particularly (Ames, 2013; Smit, 2015; Sellami and Slimi, 2016) focus on determining whether the new accounting standards (IFRS) in the country has improved the quality of financial reports since its inception. Furthermore, some of these studies looked at the association between accounting quality and corporate governance, earnings management and firm's value (Yeboach and Yeboach, 2015; Jordaan et al., 2018). Most of these studies used accrual quality as the measure of accounting quality although there are several others properties of earnings that can be used to measure the quality of financial reports.

From the above, it is apparent that there is a lack of research that examines the effect of various measures of earnings quality on the performance of the companies in South Africa's context. Therefore this paper aim at answering the following research questions: (1) how do individuals and aggregate measures of earnings quality influence the performance of the JSE listed companies? (2) How do the innate and discretionary components of each earnings quality property affect the performance of the JSE listed companies? The answer to these questions will provide guidelines to investors and other users in assessing whether the performance of a company, as represented in its financial statement truly reflect the company's actual operations. This in turn will improve investors' resource allocation decision and helps standard setters in South Africa to recommend or formulate policy that will improve the transparency of financial reports.

The remainder of the paper is organised as follows. Section 2 discusses the literature review and formulates the hypotheses of the study. The methodology of the study is explained in terms of the sample selection, data collection and variables measurements in Section 3. Section 4 reports and discusses the empirical results. Lastly, the conclusion is drawn in Section 5.

## LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

This section discusses prior studies on earnings quality and the company's performance and the theoretical framework. Furthermore, it presents the hypotheses of the study after a discussion of the individuals and the aggregate earnings quality properties.

### Earnings Quality and the Performance of the Company

The quality of the reported earnings impacts the results of the assessment of a company's performance. Earnings that are of higher quality provide accurate information about the firm's current and future performance to the users (Dechow et al., 2010). Furthermore, high earnings quality also minimises information risk and prevents managers from exercising discretion at their own advantage. In contrast, low-quality earnings portray a false picture of the firm's activities and increase information asymmetric between stakeholders (Ferrero, 2014). Therefore, high earnings quality illustrates the quality of the accounting system used by the firm.

It has been empirically measured how related the earnings quality and some aspects of the company's performance are (Barth et al., 2001; Francis et al., 2004; Bowen et al., 2008; Gray et al., 2009). Madhumathi and Ranganatham (2011) examined the association between earnings quality (measured by discretionary accruals), corporate governance and firm performance. The study revealed that transparent financial reports and good governance methods have a positive impact on company's performance. Similarly, Mahmud et al. (2009) and Ayu and Ahmar (2013) investigated the relationship between earnings quality and firm's performance, using the Malaysia and Indonesia data, respectively. Their study found that earnings quality is positively related to performance. In contrast, the study of Hejazi et al. (2014) found no relationship between earnings quality and performance, using Iran data. In general, these authors stressed the impact of a high earnings quality on the better performance of the company. This comes from the notion that accounting numbers provide accurate and useful information to the capital market.

However, some studies have demonstrated that accounting numbers do not always reflect value relevant information. For instance, the study of Negash (2008) revealed that the value relevance of accounting information did not ameliorate due to IFRS adoption. Francis et al. (2005) documented that accrual quality increases information risk and reflects earnings that do not represent the company's operations. Some studies also examined the link between earnings quality and the cost of equity capital (Francis et al., 2004; Core et al., 2008; Gray et al., 2009; Dakhaoui et al., 2017). These studies found that earnings quality is negatively related to the cost of equity capital in the sense that, poor earnings quality leads to high cost of equity capital and hence weak company performance. On the contrary, Lambert et al. (2012) argued that, the companies with low cost of equity capital are less risky and display a higher earnings quality (more transparent financial report); as such, investors in their resource allocation decisions also consider the cost of equity, since the latter affects the performance of the company.

Overall, mixed results are obtained in the literature with regard to the relationship between earnings quality and some aspect of the firm. Nevertheless, not many empirical studies have addressed the question of how related various earnings quality properties and some aspects of the companies such as the performance are. Furthermore, it is unknown how the innate and discretionary components of each earnings quality property affect the performance of the company. These questions are addressed in this study as contributions to the body of knowledge.

### **Theoretical Framework**

Two commonly used theories in earnings quality research are the capital need and decision usefulness theories. The capital need theory has been used to assess the changes in the quality of the accounting information provided to the market. It explains the reasons for companies wanting to provide high quality accounting information to the market (Shehata, 2014; Choi, 1973). High quality accounting information reduces information asymmetry between stakeholders and lowers the company's cost of equity capital (Yeh et al., 2014:239). Furthermore, it allows companies to easily obtain finances (both debt and equity), since the investors believe that these companies are less risky (Shehata, 2014). Shehata (2014) asserted that high quality financial reports also allow the capital market participants to predict accurately the future prospect of companies. Furthermore, the accurate determination of share prices depends on the quality of accounting information. Then, because investors are interested in companies with high share prices due to the high return they may get, the companies with high quality accounting information may easily raise capital.

The decision usefulness theory is based on the IASB and FASB conceptual frameworks (Dunne et al., 2008). These frameworks state that the purpose of financial reports is the provision of useful information about the financial position, performance and changes in financial status of an entity, to investors, lenders and others users (IFRS, 2010). Accounting information is useful if it is relevant and reliable. IFRS (2010) emphasizes that such information should facilitate the decision making process of the users. In fact, accounting information is used by users for different purposes and is useful if it allows them to achieve their goals. Furthermore, information is useful if its communication to the market leads to the reactions of users (Chan et al., 2006). Such reactions can be observed through changes in security prices or trade volumes. The decision usefulness theory further stresses that useful accounting information supplies knowledge about the past performance of the company and allows for the accurate forecast of its future performance.

This study lean on the decision usefulness and capital needs theories since they allow for the examination of accounting information provided to the capital market participants using factors that may influence that information. Furthermore, these theories have been successfully applied in related studies to answer research questions (Dunne et al., 2008; Tollerson, 2012; Eliwa, 2015).

### **Hypotheses Development**

Earnings quality is a multidimensional concept, as such, it is measured with many properties (Perotti and Wagenhofer, 2014). The different earnings quality properties attempt to portray the quality of financial reports as well as their relevance and usefulness to the users. In this study, five properties of earnings quality, namely, accrual quality, conservatism, earnings persistence, earnings predictability and earnings smoothness are considered. These properties are examined individually as well as aggregately. Since each property of earnings is unique, unrelated to others properties and captures a specific aspect of the firm's reported earnings, it is conjectured that each property differently affects the performance of the company as compared to the combined effect of the properties. Therefore the following hypothesis is formulated:

H1: The individuals and aggregate measures of earnings quality influence the company's performance.

To support H1, each of the properties considered is briefly discussed to illustrate its effect on the company's performance. Furthermore, specific hypotheses are formulated for each earnings quality property as well as for the aggregate earnings quality property, in support of the corresponding hypothesis.

### **Accrual Quality**

Accrual quality is described by Dechow and Dichev (2002) as "the extent to which working capital accrual maps into cash flow realization". This definition of accrual highlights one of the functions of accrual accounting, which is the adjustment in recognition of cash flow over time. The authors demonstrated that a "poor matching" means that the quality of earnings is lower. This function of accrual (adjustment in recognition of revenue over time) allowed some studies to argue that accrual is a desirable property of earnings quality, since it measures the earnings better as compared to cash flow (Dechow et al., 1994; Kim et al., 2005; Barth et al., 2016). However, it is also argued that high accrual quality lowers the quality of reported earnings (Dechow and Dichev, 2002; Dechow and Shrang, 2004). This is because accrual is subjective in nature and is subject to the managers' judgments and estimations. If these estimations are wrong, the true performance of the firm will be distorted. Furthermore, Chan et al. (2006) explained that earnings manipulation is done through the accrual process and Francis et al. (2005) claimed that accrual quality increases information risk. The authors demonstrated empirically that investors assign a price to accrual quality, since they perceive the accrual quality as providing information that cannot be diversified. Moreover, Dechow et al. (2010) explained that, even in the absence of intentional earnings manipulation, accrual could provide false information about the financial reports, since it is subject to unintentional errors that emanate from the improper application of the accounting system. In light of the above, it can be concluded that accrual quality negatively affects the company's performance. This results in the following hypothesis.

H1a: accrual quality has a negative effect on the performance of a company.

### **Conservatism**

Conservatism is a desirable property of earnings, since it is a qualitative characteristic of high-quality financial reports (Xu and Lu, 2008; Kan and Watts, 2009). It is a principle that allows accountants to be prudent in recognition of revenues and losses. In fact, under this principle, a loss should be recognized when there is a probability that the loss will occur in the future and that the loss can be measured reliably, whereas, the recognition of a gain is postponed until realization. Furthermore, Watts (2003) believed that market participants prefer underestimated earnings compared to overestimated earnings, since the former occur in rare circumstances. Therefore, conservatism is useful for decision-making because it "captures the reliability of earnings" and reduces management incentives to manipulate reported earnings (Lafond and Watts, 2008). There are two types of conservatism, including conditional and unconditional conservatisms (Beaver and Ryan, 2005; Xu and LU, 2008); both types of conservatism lead to the understatement of earnings (Beaver and Ryan, 2005) and have different impact of financial reports (Ruch and Taylor, 2015). To examine the effect of conservatism on the firm's performance, the following hypothesis is formulated.

H1b: Conservatism has a negative effect on the performance of a company.

### **Persistence and Predictability**

Persistence and predictability capture the ability of reported earnings to provide useful information to the users. Persistence refers to the stability of earnings (Dechow and Ge, 2006), whereas, predictability refers to past earnings' ability to predict future earnings (Lipe, 1990). According to Francis (2004) and Dichev and Tang (2009), earnings that are more persistent and predictable reduce forecasting errors and allow financial analysts to determine the value of the firm more accurately. Assuming that more persistent and predictable earnings improve earnings quality, the following hypotheses can be formulated.

H1c: Earnings persistence has a positive effect on the performance of a company.

H1d: Earnings predictability has a positive effect on the performance of a company

### **Earnings Smoothness**

Earnings smoothness is a technique used by managers' to avoid the fluctuation of earnings. It is believed that smoothness reduces the earnings volatility, making it more stable (Beidleman, 1973; Subramanyam, 1996; Tucker and Zarowin, 2006). In turn, stable earnings facilitate the prediction of future earnings based on the past and current earnings. Goel & Thakor (2003) and Leuz et al. (2003) argued that

earnings smoothness decreases earnings quality, since managers take action to gain the capital market's advantage. Leuz et al. (2003) further asserted that smoothness is a form of earnings management, which indicates a poor earnings quality. McInnis (2010) and Erickson et al. (2017) argued that investors assess their investment risks based on the smoothing of operating cash flow instead of the smoothing of earnings. In fact, the smoothing of cash flow cannot be sustained over the long run, as is the case with earnings. It is further argued that opaque financial reports reduce the quality of reported earnings, thereby, increasing the information risk. Taking the above into consideration, it can be inferred that earnings smoothness negatively affects the company's performance and that a company with a great level of earnings smoothness displays a performance that does not represent its true operations. Therefore, the following hypothesis can be formulated.

H1e: Earnings smoothness has a negative effect on the performance of a company.

### **Aggregate Earnings Quality Properties**

An aggregate earnings quality property (AEQP) is formed based on the five properties discussed in the previous subsections, namely, accrual quality, conservatism, earnings persistence, predictability and smoothness. A similar procedure was also adopted in Sodan (2015). Since each of the individual measure of earnings quality is expected to affect the performance of company, as demonstrated in the previous subsections, it is also expected the aggregate earnings quality properties to influence the company's performance. However, no sign is assigned to the direction of such an effect, since each individual property affects differently the performance of company. Therefore, the following hypothesis is formulated:

H1f: Aggregate earnings quality property has a significant effect on the performance of a company

### **Innate and Discretionary Components of Earnings Quality Property**

The quality of earnings is affected by two distinct components, namely, the innate and discretionary components (Francis et al., 2005). The innate component of earnings quality properties refers to the aspects of the companies that are uncontrollable by managers and is linked to the companies' characteristics and operating environments. On the contrary, the discretionary component is under the control of managers and is related to the firms' accounting systems, corporate governance and managers' decisions (Francis, 2005; Athanasakou, 2016). In fact, the classification of earnings quality properties into innate and discretionary components stems from the fact that each earnings quality property is affected by both managers' actions and factors beyond the control of managers, such as the business models and operating environments. Since the innate component of earnings quality is related to the uncertainty in the firm's economic environment, it is expected the innate component to impact the performance of a firm more than the discretionary component. Therefore, the following hypothesis can be formulated.

H2: Innate component of earnings quality properties have a more significant impact on the company's performance than the discretionary component.

## **METHODS**

This section presents the methodology of the study in terms of the sample selection, data analysis techniques and measurement of the variables of the study.

### **Sample and Data Analysis Techniques**

The sample for this study consists of all non-financial companies listed in the JSE Limited, for the period of 2009 to 2018. Financial companies were excluded from the sample in this study because they are well regulated industries with accounting rules that differ from that of other industries (Peasnell et al., 2005; Persakis and Iatridis, 2015). The inclusion of a listed non-financial company in the sample was guided by the following conditions: (1) the financial statements of the company must be available for the whole sample period, (2) the company must have all relevant information for the measurement of the dependent, independent and control variables, and (3) the company must have 5 past consecutive years of data from the beginning of the sample period, because the computation of accrual quality is based on the standard deviation of residual calculated over rolling 5 years period (Gray et al., 2009). After the applications of the above requirements, the final sample includes 800 observations, obtained from 80 companies, drawn from an initial sample of 225 companies.

The financial statements of the listed companies and the price data reports were extracted from the IRESS Research Domain database. The financial statements retrieved include the statements of financial position, the income, change in equity, cash flow and value added statements. These statements

were analysed to extract relevant information to calculate the variables of the study.

All the variables of the study were winsorized to the 1<sup>st</sup> and 99<sup>th</sup> percentile to reduce the effect of outliers. The SPSS software version 27 was employed to obtain all the statistics. A number of tests including the collinearity, heteroskedasticity, normality and linearity were performed on the data before the analysis, to check the assumptions of linear regression.

The correlation and multilevel regression analysis were applied to analyze the collected data.

### Variables Measurements

This subsection presents the models used to measure the dependent, independent and control variables of the study.

#### Measurement of the Dependent Variable

The dependent variable of the study is the company performance. This study uses both the return on asset (ROA) and the TOBIN Q to measure the firm's performance. The ROA and TOBIN Q are calculated in Equations 1 and 2, respectively.

$$ROA = \frac{\text{Earnings before interest and tax}}{\text{Total assets}} \quad (1)$$

$$TOBIN\ Q = \frac{(\text{Market value of firm} + \text{Debts})}{\text{Book value of assets}} \quad (2)$$

#### Measurement of the Independent Variables

The independent variables of the study are the earnings quality properties including the accrual quality, conservatism, earnings persistence, predictability and smoothness. The models for measuring these variables are presented next.

##### Accrual Quality

Accrual quality (AQ) is measured using the modified Dechow and Dichev (2002) model as in Francis et al. (2008) and Sodan (2015). The modified Dechow and Dichev (2002) model is given in Equation 3.

$$\Delta WC_{i,t} = \beta_0 + \beta_1 CFO_{i,t-1} + \beta_2 CFO_{i,t} + \beta_3 CFO_{i,t+1} + \Delta SALES_{i,t} + PPE_{i,t} + \mu_t \quad (3)$$

where,  $\Delta WC_t$  is the change in the working capital in the year  $t$  minus the year  $t-1$ ;  $CFO_t$  the cash flow from the operation in the year  $t$ ;  $\Delta SALES_t$  is the change in sales in year  $t$ ;  $PPE_t$  is the property, plant and equipment in year  $t$ ;  $\mu$  the prediction error,  $i, t$  the firm and year, respectively; and  $\beta$  is obtained from the regression model used. All variables are scaled by total assets at the beginning of the year  $t$ . The standard deviation of the residual, which is the proxy used for AQ, is computed over 5 years

periods as

##### Conservatism

As stated earlier, there are two types of conservatisms, namely, conditional and unconditional conservatism. The Basu (1997) model is used to measure the conditional conservatism (CONSER1) due to its popularity (Khan and Watts, 2009). The Basu (1997) model relies on the relationship between earnings and return to illustrate the timeliness recognition of losses and gains. The Basu (1997) model is provided in Equation 4.

$$EPS_{i,t} / P_{i,t-1} = \alpha_0 + \alpha_1 D + \beta_0 R_{i,t} + \beta_1 DR_{i,t} + \mu_{i,t} \quad (4)$$

where,  $EPS_{i,t}$  is the earnings per share of firm  $i$  in the period  $t$ ;  $D$  the indicator variable which is equal to 1 if  $R_{i,t}$  is negative ( $R_{i,t} < 0$ ) and 0 otherwise.  $R_{i,t}$  is the stock return of firm  $i$  in the period  $t$ .  $\beta_0$  reflects the incorporation of goods news into the current earnings period,  $\beta_1$  measures the difference of the sensitivity of earnings to positive and negative returns and  $\mu_{i,t}$  is the error term of firm  $i$  in the year  $t$ .

From Equation (4), CONSER1 is estimated with the formula:  $(\beta_0 + \beta_1) / \beta_0$ . If the value of this ratio is high, it means that the loss is recognised timely, that is, the company practices conservatism accounting. A low value indicates a less conservatism practice. The unconditional conservatism (CONSER2) is measured using the book to market ratio, computed as book value of company divided by its market value (Beaver and Ryan, 2000; Ahmed and Duellman, 2007; Persakis and Iatridis, 2015).

#### *Earnings Persistence*

The earnings persistence is measured with the model described in Dechow et al. (2010). The model assumes that the present earnings are used to estimate the future earnings; the model also assumes that companies that are sustainable, display earnings that are more persistent. The model shows the correlation between the current and future earnings as in Equation 5.

$$Earnings_{i,t+1} = \beta_0 + \beta_1 Earnings_{i,t} + \mu_{i,t} \quad (5)$$

where,  $t$  is the period  $t$  and  $\mu_{i,t}$  the error term that incorporates the information that was not captured by the earnings in the period  $t$ , to explain the earnings in the period  $t+1$ .  $\beta_1$  measures the persistence of earnings. A high value of  $\beta_1$  indicates that the earnings is more persistent, a  $\beta_1$  close to or higher than one, indicates highly persistent earnings and  $\beta_1$  close to zero indicates a less or non-persistent earnings (Persakis & Iatridis, 2015).

#### *Earnings Predictability*

The earnings predictability is commonly measured using the square root of the error variance from the earnings persistence model (Francis et al., 2004). Equation 6 defines the earnings predictability model.

$$Predict_{i,t} = \sqrt{\sigma^2(\mu_{i,t})} \quad (6)$$

where,  $Predict_{i,t}$  is the firm's  $i$  earnings predictability in the year  $t$ . The term  $\sigma^2(\mu_{i,t})$  is the estimated error variance of the firm  $i$  in the year  $t$  calculated from the earnings persistence (Equation 5). If the square root of the error variance is high, the predictability is low, and the earnings is of low quality and vice versa.

#### *Earnings Smoothness*

Earnings smoothness is measured using the Leuz et al. (2003) model as in Perotti and Wagenhoffer (2014) and Sodan (2015). The model consists of dividing the standard deviation of operating income by the standard deviation of cash flow from operations as in Equation 7. The operating income and cash flow from operations are scaled by total assets at the beginning of year  $t$ .

$$SMOOTH_{i,t} = \sigma OI_{i,t} / \sigma CFO_{i,t} \quad (7)$$

where,  $SMOOTH$  is the earnings smoothness,  $\sigma OI$  the standard deviation of operating income,  $\sigma CFO$  the standard deviation of cash flow from operation, and  $i, t$  the firm and year, respectively. The standard deviation is calculated for each firm over rolling five-years windows. A high value of  $SMOOTH$ , indicates a less earnings smoothness and a low value implies smoother earnings.

### **Measurement of Control Variables**

Firm's characteristics such as the size, leverage and growth have been found in to affect the performance of a company. The logarithm of total assets is used to measure firm's size as in Mahmud et al. (2009), Gaio and Raposo (2011) and Kuncova et al. (2016). Leverage is measured using the ratio of debt to total assets (Bowen, 2008; Ahmad et al., 2015), whereas, growth is measured using growth rate in revenues (Mahmud et al., 2009; Ahmed and Duellman, 2011).



## FINDINGS

The empirical results of the study are presented and discussed in this section, to explain the correlation amongst the earnings quality properties, the relationships between the earnings quality properties and the firm's performance as well as the relationships between the innate and discretionary components of earnings quality properties and the firm's performance.

### Correlation analysis

Table 1 reports the Pearson correlation matrix amongst the earnings quality properties.

Table 1. Correlation Amongst Earnings Quality Properties

	AQ	CONSER1	CONSER2	PERSIST	PREDICT	SMOOTH
AQ	1					
CONSER1	0.003	1				
CONSER2	0.043	0.087*	1			
PERSIST	-0.045	0.144**	-0.047	1		
PREDICT	0.075*	0.111**	-0.118*	0.664**	1	
SMOOTH	-0.199**	0.013	0.063	-0.118**	-0.136**	1

Notes: \*. \*\* Correlation is significant at the 0.05 and 0.01 levels (2-tailed), respectively. See Appendix 1 for the description of variables

The analysis of the correlation results in Table 1 reveals that, there is a low correlation amongst earnings quality properties, except for persistence and predictability which display a correlation of 0.66. A related study in Perroti and Wagenhofer (2014) also reported a high correlation between persistence and predictability. The low correlation illustrates that, each property is unique and distinct and that one property cannot be used as a substitute of others. Furthermore, the low correlation also means that multicollinearity is not a problem in the regression analysis. Moreover, the correlation amongst earnings quality properties is positive for most of the cases, except for few properties which display negative correlations; this finding is corroborated by Perroti and Wagenhofer (2014), who reported a negative correlation amongst some earnings quality properties.

### The Relation Between Earnings Quality Properties and Company's Performance

To determine, the association between earnings quality properties and performance, Equation 8 was used to illustrate the effect of individual earnings quality properties on performance. Thereafter, the effect of the aggregate earnings quality properties on performance was measured with Equation 9. Each earnings quality property was added individually to Equation 8.

$$Performance_{i,t} = \beta_0 + \beta_1 EQP_{i,t} + \beta_2 Size_{i,t} + \beta_3 Leverage_{i,t} + \beta_4 Growth_{i,t} + \mu_{i,t} \quad (8)$$

$$Performance_{i,t} = \beta_0 + \beta_1 AEQP_{i,t} + \beta_2 Size_{i,t} + \beta_3 Leverage_{i,t} + \beta_4 Growth_{i,t} + \mu_{i,t} \quad (9)$$

where, *Performance* is either ROA or Tobin Q; *EQP* represents the earnings quality properties and is either accrual quality, conservatism, persistence, predictability or earnings smoothness; *i* and *t* the firm *i* at period *t*, respectively;  $\beta$  are the regression coefficients;  $\mu$  is the error term; *AEQP* is the aggregate earnings quality property, computed by averaging each of the five individual measures of earnings quality (Gaio, 2010).

Equation 8 was estimated using the multilevel linear regression model (MLM) with fixed effect. MLM is an appropriate estimating technique for the analysis of panel data as compared to traditional models such as ordinary least square. Furthermore, MLM does not require the assumption of independence of observations to be met as it is the case with the traditional models (Hox, 2010; Field, 2013; Hair and Favero, 2019). The results of the estimations of Equation 8 and 9 are presented in Tables 2 and 3, respectively. Starting with AQ, the second and third column of Table 2 shows that AQ has the coefficients (t-statistics) of 0.121 (6.275) and -0.350 (-0.574), for ROA and TOBINQ, respectively. The results are statistically significant only when the performance is measured by ROA. This means that AQ

positively affects the performance of a company when the performance is measured using ROA. When the performance is measured by TOBINQ, there is no association between AQ and TOBINQ. The results indicate that an increase in AQ will lead to an increase in ROA. These findings imply that the companies with high AQ display a high profitability than the companies with low AQ. Since accrual is subject to judgement and estimates by managers, the results can further suggest that management estimates and judgements lead to increase in performance.

For the conditional conservatism (CONSER1), Table 2 shows that the coefficients for CONSER1 are -0.003 (t-statistic=-1.567) for ROA and -0.009 (t-statistic=-0.511) for Tobin Q, but the association is not statistically significant. This result implies that the conditional conservatism is not related to performance. With regard to the unconditional conservatism (CONSER2), Table 2 displays the coefficient values of -0.005 (t-statistic=-10.539) and -0.039 (t-statistic=-9.336) for ROA and TOBINQ, respectively. These results are statistically significant. This indicates that there is a negative association between performance and CONSER2. The unconditional conservatism implies the understatement of net asset value through for example, the recognition of accelerated depreciation, immediate recognition of research and development costs as expenses (Ryan, 2006; Beaver and Ryan, 2005). Unlike the conditional conservatism, the unconditional conservatism is not subject to the occurrence of an event (Beaver and Ryan, 2005). Therefore, the unconditional conservatism practice impacts the performance of company. The hypothesis H1b is confirmed only for unconditional conservatism.

For the earnings persistence (PERSIST), Table 2 indicates a positive significant relation between PERSIST and ROA, with a coefficient of 0.024 (t-statistic=3.962) and a negative insignificant relation between PERSIST and TOBINQ, with a coefficient of -0.044 (t-statistic=-0.829). These results suggest that earnings persistence directly influence the performance of companies when it is measured by ROA and that companies with higher persistent earnings display a high performance as compared to those with less persistent earnings.

Concerning the earnings predictability (PREDICT), Table 2 displays that predictability has coefficients of 0.070 (t-statistic=6.380) and 0.162 (t-statistic=1.552) for ROA and TOBIN Q, respectively. This means that the earnings predictability significantly influences the performance of a company when such performance is measured by ROA. However, the association is not significant when the performance is measured by TOBINQ. These results imply that, the earnings predictability is positively related to ROA and companies with higher earnings predictability (low value of PREDICT) do not display a high performance as compared to those with low earnings predictability (high value of PREDICT). This may be due to the fact that earnings predictability is also affected by accounting factors such as management's involvement (Dichev & Tang, 2009); this makes it difficult to accurately predict current/future earnings based on past/current earnings. This conclusion was also drawn by Holt (2013) who found no noticeable pattern with regard to the ability of current earnings per share to accurately predict future earnings per share.

With regard to the earnings smoothness, Table 2, portrays the estimated coefficients of -0.013 (t-statistic=-4.588) and 0.061 (t-statistic=2.361) for ROA and TOBINQ, respectively. This result indicates that, the earnings smoothness is negatively related to ROA and positively related to TOBINQ. It can be concluded that, the earnings smoothness influences the performance of a company and the positive or negative effect, depends on the indicators used in the measurement of performance.

The results of estimation of the aggregate earnings quality property (AEQP) are presented in Table 3.

Table 2. Results of the regression of performance on each earnings quality property and control variables

Notes: \*\*\* and \*\* denote significance at 1% and 5% level, respectively. T-statistics are in parentheses.

	ROA	TOBINQ	ROA	TOBINQ	ROA	TOBINQ	ROA	TOBINQ	ROA	TOBINQ	ROA	TOBINQ
Intercept	0.127*** (-3.761)	-1.208*** (-3.922)	0.247*** (-8.516)	-1.300*** (-4.997)	0.347*** (-11.993)	-0.453 (-1.72)	0.249*** (-8.668)	-1.316*** (-5.061)	0.229*** (-8.08)	-1.340*** (-5.146)	0.252*** (-8.759)	-1.334*** (-5.135)
Size	-0.000678 (-0.326)	0.115*** (-6.079)	-0.007*** (-3.622)	0.119*** (-7.029)	-0.011*** (-6.208)	0.081*** (-4.816)	-0.058*** (-3.999)	0.122*** (-7.126)	-0.007** (-3.65)	0.120*** (-7.074)	-0.005*** (-2.992)	0.115*** (-6.724)
Leverage	-0.00794*** (-4.4)	-0.691*** (-4.19)	-0.065*** (-3.527)	0.684*** (-4.165)	-0.057*** (-3.305)	0.772*** (-4.93)	-0.077*** (-4.189)	0.699*** (-4.22)	-0.090*** (-4.797)	0.634*** (-3.823)	-0.079*** (-4.338)	0.742*** (-4.486)
Growth	0.045*** (-2.936)	-0.111 (-0.777)	0.049*** (3.092)	-0.111 (-1.776)	0.030** (-2.008)	-0.294** (-2.132)	0.047*** (-2.98)	-0.106 (-0.741)	0.036** (-2.324)	-0.145 (-1.008)	0.043*** (-2.758)	-0.095 (-0.661)
AQ	0.421*** (-6.275)	-0.35 (-0.574)										
CONSER1			-0.003 (-1.567)	-0.009 (-0.511)								
CONSER2					-0.005*** (-10.539)	-0.039*** (-9.336)						
PERSIST							0.024*** (-3.962)	-0.044 (-0.829)				
PREDICT									0.072*** (-6.38)	0.162 (-1.532)		
SMOOTH											-0.013*** (-4.588)	0.061** (-2.361)

The descriptions of the variables are provided in Appendix 1.

Table 3. Results of the Regression of Performance on AEQP and Control variables

	ROA		TOBINQ	
	Coefficient	t-statistic	Coefficient	t-statistic
Intercept	0.346***	11.898	-0.543**	-2.045
AEQP	-0.0264***	-10.314	-0.197***	-8.361
Size	-0.011***	-5.924	0.089***	5.3
Leverage	-0.056***	-3.222	0.764***	4.841
Growth	0.031**	2.055	-0.256*	-1.843
N	800		800	

Notes: \*\*\*, \*\* and \* denote significance at 1%, 5% and 10%, respectively.  
The description of the variables is provided in Appendix 1

Table 3 displays that the estimated coefficients of AEQP are -0.0264 (t-statistic=-10.314) and -0.197 (t=-8.361) for ROA and TOBINQ, respectively. This indicates that AEQP is significantly related to the performance of company. This result is consistent with H1f.

The above findings can be summarized as follows: (1) Each individual earnings quality property is related to performance, except for the conditional conservatism; furthermore, the interpretations of the results are different from one property to another, (2) AEQP is related to performance, with the estimated coefficients different from those obtained in individual regression of earnings quality measures and (3) There is a low correlation between earnings quality properties, which indicates that each property is distinct and captures different economic concepts, as explained in subsection 4.1.

In light of the above, it can be concluded that the individuals and aggregate measures of earnings quality influence the performance of company, which supports the hypothesis H1. Therefore, investors can use various properties of earnings to assess the company's performance and make prediction about future performance.

With regard to control variables, in Tables 2 and 3, the majority of the regression indicates that the size and leverage have an inverse relation with performance, whereas, growth has a direct effect on performance. Similar findings were reported in (Dogan, 2013; Quand and Xim, 2014; Kuncova et al., 2016; Karuma et al., 2018). In particular, it was reported a negative association between leverage and performance in (Quan and Xin, 2014), a positive association between size and performance in (Dogan, 2013; Kuncova et al., 2016) and a positive relation between leverage and performance in ( Karuma et al., 2018).

To check the robustness of the aforementioned results, the study uses the bootstrapping estimation technique and found the results consistent with that of the multilevel regression discussed above.

### The Relation Between Innate and Discretionary Components of Earnings Quality Properties and Performance

To partition each earnings quality property into innate and discretionary components, a procedure or model used by Francis et al. (2005) was utilized. The model regresses each property of earnings quality into innate factors, as in Equation 10.

$$EQP_{i,t} = \beta_{0,i} + \beta_{1,i}size_{i,t} + \beta_{2,i}\sigma(CFO)_{i,t} + \beta_{3,i}\sigma(sales)_{i,t} + \beta_{4,i}opercycle_{i,t} + \beta_{5,i}NegEam_{i,t} + \beta_{6,i}CI_{i,t} + \mu_{i,t} \tag{10}$$

Where  $EQP_{i,t}$  represents the earnings quality properties including accrual quality, conservatism, persistence, predictability or earnings smoothness;  $\sigma(CFO)_{i,t}$  the standard deviation of the cash flow from the companies' operations calculated over rolling five year period;  $\sigma(Sales)_{i,t}$  the standard deviation of sales calculated over rolling five years period;  $Opereycle_{i,t}$  the operating cycle, computed as the log of sum of account receivables days and inventory days;  $CI$  is the capital intensity;  $NegEam_{i,t}$  the negative earnings;  $\mu_{i,t}$  the residual, which measures the discretionary component of earnings quality property and

$i, t$  the firm and year, respectively. The predicted or estimated value, obtained from Equation 10, represents the innate component of earnings quality property.

Equation 10 is used to compute the innate and discretionary components of EQP. In order to test the effect of innate and discretionary components of each EQP on the performance, Equation 11 is used, where performance is regressed on innate and discretionary EQP. Control variables (size, leverage and growth) that have been found to influence the firm performance are included in Equation 11.

$$Performance_{i,t} = \beta_0 + \beta_1 InnateEQP_{i,t} + \beta_2 DiscretionaryEQP_{i,t} + \beta_3 Size_{i,t} + \beta_4 Lev_{i,t} + \beta_5 Growth_{i,t} + \mu_{i,t} \quad (11)$$

where, Performance is either ROA or TOBINQ. Equation 11 is used to test the hypothesis H2, where each earnings property is added individually to the model. The results of estimating Equation 11, using multilevel regression are reported in Table 4. It is shown in Table 4 that, for accrual quality (AQ), unconditional conservatism (CONSER2) and earnings predictability (PREDICT), both the innate and discretionary portions of these properties affect the performance of company, measured by ROA. However, no association was found between these properties and TOBINQ. The results indicate that the discretionary accrual and predictability positively affect the performance (ROA); this is in line with Bowen et al. (2008)'s view that the discretionary action of managers in the application of accounting rules,

Table 4. Results of the regression of performance on innate and discretionary components of each property of earnings quality

	AQ		CONSER1		CONSER2		PERSIST		PREDICT		SMOOTH	
	ROA	TOBINQ	ROA	TOBINQ	ROA	TOBINQ	ROA	TOBINQ	ROA	TOBINQ	ROA	TOBINQ
Intercept	0.3975*** (-4.758)	1.5317*** (-1.938)	0.3124*** (-10.114)	0.9449*** (-3.35)	0.7956*** (-14.967)	3.7125*** (-7.607)	0.2646*** (-9.521)	1.4411*** (-5.763)	0.139729*** (-4.795)	-0.5865** (-2.184)	0.3057*** (-10.967)	1.3517*** (-5.073)
Innate	2.2983*** (-8.145)	0.8148 (-0.305)	0.0823*** (-5.624)	0.4243*** (-3.172)	0.0277*** (-11.62)	0.1274*** (-5.814)	0.1639*** (-8.904)	1.1587*** (-6.953)	0.4262*** (-10.084)	2.8274*** (-7.278)	0.0843*** (-10.333)	0.0819 (-1.044)
DISCRE	0.2966*** (-4.434)	-0.4211 (-0.671)	-0.0009 (-0.308)	-0.0106 (-0.397)	-0.005*** (-10.139)	0.0542*** (-11.892)	0.0084 (-1.39)	0.0633 (-1.191)	0.4262*** (-10.084)	2.8274*** (-7.278)	-0.0043 (-1.484)	0.0599** (-2.139)
Size	0.0245*** (-5.822)	0.1305*** (-3.285)	0.0102*** (-5.194)	0.1007*** (-5.623)	0.0292*** (-11.664)	0.2128*** (-9.264)	-0.014*** (-6.904)	0.1718*** (-9.763)	-0.0091*** (-5.077)	0.1417*** (-8.701)	0.0053*** (-2.975)	0.1149*** (-6.723)
Leverage	0.0688*** (-3.94)	0.6997*** (-4.228)	0.0767*** (-4.25)	0.6399*** (-3.88)	0.0858*** (-5.293)	0.8624*** (-5.772)	0.0796*** (-4.514)	0.6735*** (-4.228)	-0.0937*** (-5.413)	0.6378*** (-4.028)	0.0651*** (-3.764)	0.7371*** (-4.437)
Growth	0.0479*** (-3.172)	-0.1092 (-0.76)	0.0428*** (-2.742)	-0.1457 (-1.018)	0.0053 (-0.373)	-0.1358 (-1.034)	0.0414*** (-2.731)	-0.0427 (-0.311)	0.0298*** (-1.993)	-0.0768 (-0.56)	0.0410*** (-2.758)	-0.0943 (-0.658)
N	800	800	800	800	800	800	800	800	800	800	800	800

Notes: \*\*\* and \*\* denote significance at 1% and 5% level, respectively. T-statistics are in parentheses.

The descriptions of the variables are provided in Appendix 1. provides an advantage to shareholders, due to the reporting of an increase in performance

For the conditional conservatism (CONSER1), earnings persistence (PERSIST) and smoothness (SMOOTH), only the innate component influences the performance, when measured by ROA. But when the performance is measured with TOBINQ, insignificant association was found. The exception was meet with the earnings smoothness; it was found that both the innate and discretionary smoothness are associated with performance, when measured by TOBIN Q.

These results illustrate that each component of earnings quality property affect differently the performance of companies, emphasizing the need to partition each earnings quality property into its parts. In addition, the direction of effect depends on the measurement used to evaluate the performance; this indicates that each measure of performance reflects a specific business outcome or aspect of the company. This is in line with Hamann et al. (2013) who refer to performance as a multidimensional concept.

These results further suggest that the performance of companies is affected by either (1) the innate component of earnings quality property, (2) the discretionary component of earnings quality property and/or (3) both the innate and discretionary components of earnings quality properties, depending on the property used. However, in most of the cases, the innate components have a greater impact on performance than the discretionary component. Therefore, the results support H2. Therefore, it can be

concluded that the quality of reported earnings is mostly affected by companies' characteristics and operational environment; which emphasizes the need to separate each property into its innate and discretionary components. Furthermore, the accounting standards applied in South Africa (IFRS) have improved the accounting quality by reducing managers' opportunistic reporting decisions. Therefore, investors need to pay more attention to the companies' business models and the operating environments, when evaluating earnings quality. Nevertheless, because the accounting discretion of manager may change from one reporting period to the next, investors must also pay attention to the accounting discretion.

## CONCLUSION

This paper investigated the association between various properties of earnings including accrual quality, conservatism, earnings persistence, predictability and smoothness and the performance of JSE listed companies. The findings indicate a statistically significant association between the earnings quality properties and the performance of these companies. An exception was noted for the conditional conservatism, which was found to be unrelated with performance.

The paper further separated each earnings property into its innate and discretionary parts and examined the effect of each part on the companies' performance. The results revealed that both components influence the performance of the companies, in most of the cases. However the innate component displays a higher impact on performance than the discretionary component. This result suggests that, in South Africa, the operational environments of the companies had a greater impact on performance compared to the accounting discretions excised by the managers of these companies.

Furthermore, for some properties such as the conditional conservatisms, their separation into the innate and discretionary components has shift the statistical insignificance to the statistically significance; this emphasize the advantage of partitioning the properties into their innate and discretionary parts. Overall, the results achieved in this paper emphasize the importance of earnings quality in the evaluation and prediction of companies' performance. The results show that the choice of the measurement for the evaluation of performance matter, as different results may be obtained with different measurements of performance

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**Appendix 1 - Description of variables**

Variable symbol	Variable	Definition
AQ	Accrual quality	The standard deviation of the residual from a regression of working capital, on prior, current and future cash flow from operations, sales and properties plants and equipment; all variables are scaled by asset at beginning of the year
CONSER1	Conditional conservatism	The ratio of coefficient of bad news to the coefficient of good news, obtained from a regression of earnings per share deflated by prior price per share on return
CONSER2	Unconditional conservatism	the book to market ratio
PERSIST	Earnings persistence	The slope coefficient from a regression of profit before extraordinary item, scaled by asset beginning of the year, on previous profit before extraordinary item scaled by asset beginning of the year
PREDICT	Earnings predictability	The square root of the error variance from earnings persistence model
SMOOTH	Earnings smoothness	The ratio of operating income deflated by asset beginning of the year to the standard deviation of cash flow, scaled by asset beginning of the year; the standard deviation is computed over 5-years period
ROA	Return on assets	The ratio of earnings before interest and tax and total assets
TOBINQ	TOBINQ	The market value of firm plus debts divided by total assets.
Size	Size	The natural logarithm of total assets
Leverage	Leverage	The ratio of debts over total asset
Growth	Growth	The growth rate in revenue.
AEQP	Aggregate earnings quality property	Average of AQ, CONSER, PERSIST, PREDICT and SMOOTH.
Innate	Innate	Innate component of earnings quality property
DISCRE	Discretionary	Discretionary component of earnings quality property