

## **INVESTIGATING THE ASSOCIATION BETWEEN DISCLOSURE QUALITY AND MISPRICING OF ACCRUALS AND CASH FLOWS: CASE STUDY OF IRAN**

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### **Abstract**

When investors form their expectation of the future profits of the corporation, they forecast the stability of the accruals less than the cash flow, and consequently the stock will be priced incorrectly. Disclosure of information would keep the analysts and investors informed and will increase the accuracy of their predictions. Thus Disclosure with higher quality contributes to the full comprehension of information about accruals and cash flow and it's expected to have an impact on the earnings components mispricing. Investigation of the relationship between disclosure quality and incorrect pricing of accruals and cash flow is important because it highlights the role of quality of disclosure in helping the investors understand the correct accounting information related to prices; therefore a relationship is formed between disclosure quality and market performance. Thus it is expected that the stock price in firms with higher disclosure quality in comparison with firms with lower disclosure quality, would reflect the persistence of accruals (cash flow) with more accuracy. To investigate the purpose of this study, the information of about 82 firms listed in Iran's stock exchange market during the years 2002 to 2010 were used. The application of multiple regression methods using panel data indicates that investors underestimate the persistence of accruals and overestimate the persistence of cash flow. This behavior of investors causes stock to be priced incorrectly. Therefore, incorrect pricing of earnings components is reduced in firms with higher disclosure quality.

**Keywords:** *Disclosure Quality, Mispricing, Accrual Anomaly, Cash Flow Mispricing*

## **JEL Classification: G3**

### **1. INTRODUCTION**

The purpose of this study is investigating the association between disclosure quality and the mispricing of accruals and cash flow. Higher quality disclosure can help the investors to fully comprehend the accruals and cash flow information for future earnings. Investors predict the future stock returns based on reported earnings components (accruals and operating cash flow). During this forecasts there are inexperienced investors who do not consider the Factors that affect the correct prediction of the future return such as sustainability of accruals, or have an incorrect estimation that will lead to their incorrect response. So, when disclosure quality is high, investors can value their cash flow more accurately.

The major purpose of disclosure is informing the analysts and investors of the amount and timing of future cash flows so that the investors and financial analysts have a better prediction of the future earnings. Therefore, transparency and improved disclosure to shareholders would result in providing better information. The research which has been done in this field shows that a good disclosure, improves the accuracy of analysts' forecast of profits in future years. This means that earnings of firms with high disclosure levels comparing with the firms with low disclosure levels have a stronger relationship with the future stock returns (Jesper & Plenborg, 2008). Information disclosure plays a vital role in accurate and informed decision-making of various groups, especially the investors. However, Business are reluctant to disclose adequate financial information without outside pressure and legal and professional requirements. It's Likely that the reluctance to disclose adequately is relevant to the mispricing of earnings components (accruals and cash flow). Accounting and financial reporting purposes require the information to be disclosed appropriately and accessing the information to be possible for everyone (Arab-mazar and Arzitoon, 2005). According to Sloan (1996), the investors may act slowly in comprehension of the content information of accruals. If they have any information regarding the accrual and cash components of earnings to predict the future returns they may price the stock as accurately as possible.

### **2. MISPRICING**

From the perspective of theory, total supply and demand created by investors based on their perceptions of investment returns determines the market price of a stock, assuming the average behavior of investors in the market is reasonable. However in practice, sometimes the market doesn't act reasonable facing the

information available and consequently, the intrinsic value of stock and the market prices will differ. Saghafi (2011), quoting Frankel and colleagues (1998) expresses; In case the ratio of intrinsic value for the price of certain securities, is very high or low, the securities have not been evaluated by the market correctly and its price is more or less than the actual price. Accordingly, the low (high) intrinsic value to price ratio, indicates the characteristics of high or low priced stocks.

### **2.1. Mispricing of accruals**

Sloan (1996) has observed a negative correlation between accruals and future stock returns. He announced that the existence of such a correlation is because of inexperienced investors in the market and stated that when the investors form their expectations of corporate profits they tend to overestimate the stability and persistence of accruals and underestimate the persistence of cash flows and in fact they forecast the persistence of accruals higher than the cash flow and this causes the stock to be priced incorrectly. (Haghighat & Iranshahi. 2010). Existence of such a relationship shows the incorrect reaction of investors to changes in accruals that studying the causes and factors affecting this incorrect reaction, has provided researchers impetus for many studies. Hence, in the following years many researchers began to investigate accruals anomaly. Sloan found that calculation of accrual of current earnings with regard to earnings of the next year has less stability than the cash flows. He considers these results arising from the difference in the reliability of the reported accruals and cash flows and he relates low persistence accruals to accruals with low reliability, and vice versa. Some sided with Sloan, acknowledged the role persistence of accruals; the cause of the investors incorrect reaction. Sloan also argues that such average investors act slowly in comprehension of the content of economical information regarding accruals. Results for Xie (2001) indicate that the coefficient of pricing the accruals is significantly higher than Coefficient of prediction accruals. In other words market is pricing accruals more than the real value. The research findings indicate, this overpricing, mainly occurs for abnormal accruals.

### **2.2. Mispricing of cash flow**

Sloan (1996) provides evidence that investors overestimate the persistence of accruals and underestimate the persistence of cash flows. His literature is focused primarily on the estimates of excessive wealth. However, recent studies suggests that research focus on accruals mispricing, is incomplete without an investigation of mispricing of cash flow (Desai and et.al [2004], Yu [2007], Baron and Magilk [2004]). In this study, the role of disclosure quality is investigated in the detailed

assessment of accruals and cash flows. Specifically, this is the main issue of this research; if investors, comprehend the information related to accrual and cash flow components of future earnings better, for companies with higher disclosure quality, Securities will be priced as they have access to information disclosure quality below.

### **2.3. Consequences of mispricing the Accruals and cash flow**

Some researchers believe that companies are not reluctant to provide information, unless that bound by the government or accounting profession. According to Hendrickson and Van Breda (1992) one of the reasons of reluctance of firms to disclose information is that because investors cannot understand accounting procedures and policies, more information disclosure will lead them astray. This view is not also strongly supported, because financial managers and analysts in the field of accounting have complementary education and shareholders can make use of their professional view. Therefore investors understand the reported earnings with high quality disclosure better and as a result, lower mispricing is observed in profit components of these firms. If the mispricing of accruals is due to the limited ability of investors to assess the Persistence of these items, it is expected that companies which investors interpret their information with high accounting skills, Should experience less mispricing in accruals. (Collins & et al, 2003)

### **3. ACCRUAL ANOMALY**

Sloan (1996) has observed a negative relationship between accruals and future stock returns. He termed this negative relationship accruals anomaly. In the study by Sloan (1996) and many subsequent studies, it is argued that investors are interested in overestimating the persistence of accruals and underestimating the persistence of cash flows. As a result with the least asymmetry, the firms that have high accruals, real returns are less than expected returns. They consider inexperienced investors the reason causing accruals anomaly.(Haghighat & Iranshahi, 2010)

Although extensive evidence confirms Sloan's findings and subsequent studies but it's still not clear what factors contribute to accruals anomaly. Sloan's hypothesis (1996) was based on the fact that the accruals anomaly is arising from mispricing. So that investors assume the reported income to be fixed and are not capable of understanding the lower persistence of accruals. This hypothesis has a bias towards accruals following two results:

- 1) Investors' expectations of future earnings tend to be upward (downward) for firms with low accruals (high).
- 2) The ability to predict future earnings from accruals is reduced with the amount of persistency of accruals.

The findings of Sloan (1996) empirically support the first concept. Thus, for firms with low (high) accruals stock return reliability is positive (negative).

The second concept experimentally is supported by Xie (2001) and Richardson et al (2006). Xie (2001) concluded that the abnormal return is higher in discretionary accruals; He also provides evidence, that the accruals anomaly is triggered by abnormal accruals mispricing. Richardson and colleagues (2006) with studying the components of accruals found that accruals components low reliability has a stronger association with abnormal future stock returns. (Shi & Zhang, 2011)

#### **4. DISCLOSURE QUALITY AND THE MISPRICING OF ACCRUALS AND CASH FLOW**

The results of this study providing empirical evidence can reduce at least some abnormalities of the market through high disclosure quality. In addition this study could provide evidence for accounting policymakers to inform them to measure the costs and benefits of information disclosure development. (Drake et al, 2009)

Louis and colleagues (2007) investigated whether the nondisclosure of earnings accrual component contributes to the mispricing of the discretionary portion of accruals? They report no evidence of abnormal accrual mispricing for those firms that disclose earnings accrual component information. According to research results, Lewis and colleagues (2007), disclosure has a positive relationship with the ability of investors for earnings component pricing.

#### **5. LITERATURE**

##### **5.1. International literature**

Sloan (1996) investigates whether stock prices reflect information about accrual and cash flow components of future earnings? He disaggregated current earnings into two components, and concluded that persistence of current earnings would decrease with the increasing accrual component and would increase with increasing the cash component. Sloan noted the cause of this decline in intellectual attributes of accruals.

Botosan (1997), examined the relationship between disclosure level and cost of capital. He concluded that firms that do not comply with financial analysts

experienced a lower cost of capital with increases in the disclosure. He also considered the market beta and the size of the firm as control variables in this research and concluded that the negative relationship between disclosure level and cost of capital with the market beta, increased and with regard to company size, can be reduced.

Xie (2001), investigated the mispricing of abnormal accruals. He investigated whether the stock price reasonably reflects the consequences of predicting one year benefit from accruals? His evidence indicated that the coefficient of valuation of accruals, is significantly higher the coefficient related to prediction of accruals. In other words, the market prices the accruals more than their intrinsic value; because, investors overestimate the stability of accruals and abnormal accruals compared have less stability than normal accruals and also normal accruals compared to operating cash flow. In additional, the market overestimates their stability; thus, excessively prices both normal and abnormal accruals. His findings indicate this overvalues mainly occurs for abnormal accruals.

Collins et.al (2003), examined the effect of institutional ownership on mispricing of accruals. The results indicate that low levels of institutional ownership with the mispricing of accruals, have a significant and positive relationship.

Richardson et al. (2006), investigated the relationship between the reliability of accruals and earnings persistence. They concluded that accruals with lower reliability result in earnings with less persistency and investors can forecasts less persistence earnings. In addition, they divided accruals into groups with different errors and investigated the relationship between the persistence of accruals and accruals estimation error. Their evidence shows, accruals, with the greatest potential error provides the least persistence.

Louis et al. (2007), began the integrated analysis of the relationship between disclosure of accruals and the accruals anomaly. They discussed whether the non-disclosure of accrual information with earnings announcements may lead to the accruals anomaly. They concluded in firms that do not disclose information of accrual when earnings announcements, exists the accruals anomaly. In other words, if companies disclose information on accruals in their earnings announcements, the mispricing of accruals can be avoided.

## **5.2. Literature import**

Haghighat & Iranshahi (2010), studied the investors reaction to the changes in accruals. They first investigate the persistence of earning's components. The results indicates the incorrect reaction from investors and when the investors form

their expectations of firms earning, are interested in overestimating the persistence of accruals and underestimating the persistence of cash flows. As a result, this will be cause a negative relationship between accruals and future stock returns. They investigated the cause of the incorrect reaction of investors. Based on what Sloan and other researchers have shown their research, investors' ignorance of persistence of accruals, causes their incorrect reaction.

Saghafi (2011), by examining the role of financial reporting in the integration of price and stock intrinsic value, states that if the ratio of intrinsic value to price for certain securities, is very high or low, these securities assessment isn't done correctly by the market and its price is more or less than fair value. Therefore, low average of the ratio of fair value to the stock prices, is evidence of the mispricing of securities. They investigate whether disclosure with higher quality helps a better comprehension of information of the accrual and cash flow component of earnings and its influence on mispricing.

## **6. HYPOTHESIS**

In order to pursue the goals of this research some hypothesis are designed as followed:

Hypothesis 1: The persistence of accrual is less than the cash flow.

Hypothesis 2: The persistence of accrual in the firms with higher- quality disclosures is more than that of cash flow.

Hypothesis 3: Investors, overvalue the persistence of accruals.

Hypothesis 4: Investors, undervalue the persistence of cash flow.

Hypothesis 5: Mispricing of earnings components is reduced in companies that have high disclosure quality.

## **7. METHODOLOGY & SAMPLE**

Since the purpose of this research is finding the possible correlation between disclosure quality and the mispricing of accruals and cash flows, cross-section data of firms listed in the Tehran Stock Exchange has been analyzed, for period 2003-2009.

The research sample from firms listed in Tehran Stock Exchange has been selected with the following restrictions:

Firms that their financial year ended to the Persian date Esfand 29 per year.

Because of the specific nature of the activities of some companies such as: insurance, leasing, financial intermediation, investment, banking and financial institutions and holding, these companies have been excluded from the sample.

Based on this condition, 82 firms constitute the study sample.

## 8. RESULTS

Table (1) shows descriptive statistics of the study data.

**Table (1): descriptive statistics data**

Variable	N	Average	Middle	S.D	Max	Min	Stretch	Skew
Earnings	492	0.2286	0.2025	0.1548	1.153	-0.325	6.228	1.002
Cash flow	492	0.171	0.153	0.167	1.331	-0.678	12.041	1.334
Accrual	492	0.057	0.045	0.170	1.016	-1.079	10.585	-0.437
Abnormal return	492	0.1248	0.0514	0.7514	8.411	-1.082	51.395	5.275

In order to examine the normality the data normality test of residual sentences is used. Therefore if the result of the probability part is greater than 5%, null hypothesis based on normal distribution according to Jarque-Bera statistics will be accepted that implies the normality distribution of data. Regarding the results of table (2) normality of the data in confidence level of 99% is accepted.

**Table (2): test of normality of data**

Variable	Earn	Cash flow	Accrual	Dis.quality	Abnormal return
Jarque-Bera	345.34	2125.37	1394.53	95.66	58678
Prob	0.000	0.000	0.000	0.000	0.000

For estimating the linear regression of the models Ordinary Least Squares method (OLS) is generally used. But for solving problems such as heteroscedasticity method of Generalized Least Squares (GLS) is used. The GLS method weights the variables of model pattern of the regression. Method of data analysis is Paneling Data using Ordinary Least Squares regression (OLS) and Generalized Least Squares regression (GLS) that used for Pooled Data. Also in this study, the Mishkin Test is used for significant differences between the forecasting coefficients and valuation coefficients in the two models simultaneously. Wald Test is used for significant differences in the coefficients in one model.



### 8.1. Hypothesis 1

To test the first hypothesis, model (1) which has been represented by Drake et al. (2009) has been estimated and conclusions have been made based on comparing the coefficient of ACC and CFO. To confirm this hypothesis, ACC coefficient should be less than CFO coefficient.

$$EARN_{t+1} = \delta_0 + \delta_1 ACC_t + \delta_2 CFO_t + v_{t+1} \tag{1}$$

Model (1) is the prediction models and is used to measure the persistence of current earnings cash flow and accrual components. This model also estimates forecasting coefficients ( $\delta_1, \delta_2$ ) for persistence of the weights attributed to accruals and cash flow when forecasting future earnings.

**Table 3: The result of estimating model (1)**

Variable	Coefficient	t-Statistic	Prob
ACC	0.577	14.527	0.000
CFO	0.609	14.352	0.000
Adj R-squared:	0.336	F-Statistic:	125.22
D-W state:	2.127	Prob (F):	0.000
Wald Test:		F-statistic:	0.832
		Prob (F):	0.362

Earn= income before extraordinary items and discontinued operations. CFO= operating cash flows. ACC= EARN – CFO. All variable scaled by average total assets.

Empirical evidence is reflected in table (3), indicates that the coefficient of accruals (0.577), is significantly smaller than the coefficient of cash flow (0.609). Therefore, the persistence of the accrual component of earnings is less than the cash component. For significant difference of these coefficients, Wald Test is performed. However, the results of Wald Statistic (0.83) are not significant and this means that the first hypothesis can be rejected.

### 8.2. Hypothesis 2

To test the second hypothesis, model (2) that has been represented by Drake et al. (2009) has been estimated and is concluded based on comparison of HCFO with HACC coefficient. It's expected that HACC coefficient is more than HCFO coefficient.

$$EARN_{t+1} = \gamma_0 + \gamma_1 ACC_t + \gamma_2 HACC_t + \gamma_3 CFO_t + \gamma_4 HCFO_t + v_{t+1} \tag{2}$$

**Table 4: The result of estimating model (2)**

Variable	Coefficient	t-Statistic	Sig
ACC	0.41	8.758	0.0000
HACC	0.257	4.404	0.0000
CFO	0.478	10.018	0.0000
HCFO	0.157	3.667	0.0003
Adj R-squared:	0.411	F-Statistic:	39.21
D-W State:	2.046	Prob (F):	0.000
Wald Test:		F-Statistic:	2.3809
		Prob (F):	0.1235

Earn= income before extraordinary items and discontinued operations. CFO= operating cash flows  
 HCFO= Indicator Disclosure Quality (zero & one) that is multiplied in accruals. ACC= EARN –  
 CFO. HACC= Indicator Disclosure Quality (zero & one) that is multiplied operating cash flows.

Model (2) has been used for measuring persistence of the accrual and cash flow components of current earnings in firms with high disclosure quality. To test the second hypothesis, the HACC coefficient has been compared with HCFO coefficient. Following Sloan (1996),  $\gamma_2 > \gamma_4$  is expected. Evidence indicates the coefficient of accruals in firms with high disclosure quality (0.257), is larger than the coefficient of cash flow (0.157). Therefore, the persistence of the accrual component of earnings in companies with high-quality disclosure is more than the persistence of cash component. Results of Wald Test (2.38), is significant in the level of 10% and this means that based on, the model used in the paper the second hypothesis is confirmed.

### 8.3. Hypothesis 3 & 4

Model (3) is the valuation model. This model estimates the valuation coefficients

( $\delta_1^*$ ,  $\delta_2^*$ ) of persistence of weights that investors relate to accruals and cash flows.

According to Sloan (1996) investors are expected to overvalue the persistence of accruals and undervalue persistence of cash flows (for

example;  $\delta_1^* > \delta_1$  and  $\delta_2^* < \delta_2$ ). For testing the third and fourth hypothesis, the

system of simultaneous equations is estimated (models 1 and 3 together) and using the results, Mishkin Test is performed for comparing models coefficients in the estimation of simultaneous equations systems. Conclusion about the third hypothesis is based on a comparison of the coefficients ACC of model (3) with model (1). ACC coefficient of Model (3) is expected to be significantly more than the ACC coefficient of model (1). Result of Mishkin Test is also presented for the third hypothesis. The results indicate that in the level of 10%, ACCR coefficient in model (3) is bigger than ACC coefficients in the model (1) and this means not rejecting the third hypothesis. Conclusions of the fourth hypothesis are based on comparing the CFO coefficient of model (3) with The CFO coefficient of model (1). CFO coefficient of Model (3) is expected to be significantly less than the CFO coefficient of model (1).

$$ABR_{t+1} = \beta(EARN_{t+1} - \delta_0 - \delta_1^*ACC_t - \delta_2^*CFO_t) + e_{t+1} \quad (3)$$

**Table 5: The result of estimating system of simultaneous equations (1 & 3) and Mishkin Test**

Forecasting Model- EARN				Valuation Model- ABR			
Variable	Coefficient	z-Statistic	sig	Variable	Coefficient	z-Statistic	Sig
ACC	0.583	14.618	0.000	EARN	2.377	9.295	0.000
CFO	0.613	14.557	0.000	ACC	0.434	4.490	0.000
				CFO	0.652	6.486	0.000
$R^2$	0.342			$R^2$	0.158		
Mishkin Test:	Prob			CFO: 0.718 ACC: 0.151			

ABR= Stock Abnormal Return. Earn= income before extraordinary items and discontinued operations. CFO= operating cash flows. ACC= EARN – CFO.

On the contrary to Sloan (1996), the results of table (5) points out that these investors significantly undervalue the persistence of earning accrual component; result of Mishkin Test shows that a significant difference between the ACCR coefficients exists in the model (1) and model (3). However, since valuation coefficient for accruals ( $\delta_1^* = 0.434$ ) is less than forecasting coefficient (table 5) for accruals ( $\delta_1 = 0.584$ ), thus the hypothesis that investors overvalue persistence of accruals will not be accepted.

Valuation coefficient for cash flow ( $\delta_2^* = 0.652$ ) is more than forecasting coefficient (table 5) for cash flow ( $\delta_2 = 0.613$ ). Also On the contrary to Sloan (1996), the results of estimating this model indicate that investors overvalue the persistence of earning cash flow component. Insignificance of Mishkin Statistic about difference of CFO coefficient in two models and the higher valuation coefficient of that forecasting coefficient, means rejecting the fourth research hypothesis.

#### 8.4. Hypothesis 5

To examine the fifth hypothesis, the system of simultaneous equations is estimated (models 2 and 4 together) and using its results, Mishkin Test is performed for comparing models' coefficients in the simultaneous estimation. According to the fifth hypothesis, we expect that HCFO and HACC coefficients are not significantly different in two equations (since more disclosure will cause capital market to have a more accurate impression of the amount of persistence in earnings components).

$$ABR_{t+1} = \beta(EARN_{t+1} - \gamma_0 - \gamma_1^*ACC_t - \gamma_2^*HACC_t - \gamma_3^*CFO_t - \gamma_4^*HCFO_t) + e_{t+1} \quad (4)$$

Table 6: The result of estimating system of simultaneous equations (1 & 3) and Mishkin Test

Forecasting Model- EARN				Valuation Model- ABR			
Variable	Coefficient	z-Statistic	sig	Variable	Coefficient	z-Statistic	Sig
ACC	0.452	9.235	0.000	EARN	2.499	9.624	0.000
HACC	0.225	3.766	0.0002	ACC	0.274	2.403	0.016
CFO	0.504	10.115	0.000	HACC	0.319	2.312	0.021
HCFO	0.154	3.275	0.0011	CFO	0.545	4.740	0.000
				HCFO	0.131	1.207	0.227
$R^2$	0.369			$R^2$	0.168		
Mishkin Test:	Prob	CFO: 0.745		HCFO: 0.845			
		ACC: 0.153		HACC: 0.531			

ABR= Stock Abnormal Returns. Earn= income before extraordinary items and discontinued operations. CFO= operating cash flows. HCFO= Indicator Disclosure Quality (zero & one) that is multiplied in accruals. ACC= EARN – CFO HACC= Indicator Disclosure Quality (zero & one) that is multiplied operating cash flows.

The result of Mishkin Test (for HCFO 0.85 and for HACC 0.53) indicated that in firms with more disclosure, the market estimates the persistence of ACC & CFO correctly. This subject indicates verification of the fifth hypothesis. As a result, mispricing of earnings components are reduced in the firms with higher-quality disclosure.

## 9. CONCLUSION

This study has investigated the relationship between disclosure quality and mispricing of earnings components. Disclosure of information plays a vital role in correct and conscious decision-making of the various groups, especially investors. But economic units without outside organization pressures and legal and professional requirements are not interested in disclosing enough of their financial information. It is possible that the lack of interest in enough disclosure is associated with the mispricing of earnings components. So disclosure of higher quality helps the full comprehension of the information of accruals and cash flows and is expected to be influential on mispricing of earnings components. Investigating the Relationship between disclosure quality and the mispricing of accruals and cash flows is important, because it highlights the role of quality of disclosure in helping investors to have a correct understanding of accounting information regarding the prices; as a result a relationship is formed between disclosure quality and market efficiency. Thus it is expected that the stock price of firms with higher disclosure quality in comparison with lower disclosure quality, would reflect the persistence of accruals (cash flow) more carefully.

Investors predict the future earnings and because the profit is made up of two components of accrual and cash, persistence of earnings accrual and cash components affect the accuracy of investors' forecasts. Evidence shows that they overvalue the persistence of accruals. On this basis in reaction to forecasting future earnings, stock prices are determined and if the persistence of earning components are not estimated accurately, the shares of the firm is over or undervalued which is called mispricing. If disclosure with higher quality can increase investors' understands of earning components, it will reduce mispricing of earnings components. In this study some evidence has been provided in this field.

The findings show that the persistence of the earnings accrual component is not less than earnings cash component (first hypothesis). Also, the persistence of earnings accrual component in the firms with higher- quality disclosures is more than that cash component of earnings (second hypothesis). Investors also on the contrary of popular expectation, are undervaluing persistence of accruals and overvalue persistence of cash flow (third and fourth hypothesis). In addition, mispricing of earnings components is reduced in firms with higher disclosure quality. Therefore, disclosure of timely and reliable of accounting information has an impact on process of the stock valuation and reduces mispricing of earnings components. Hence the disclosure of high quality information is a method of

increasing the efficiency of capital markets that should be taken into consideration by the accounting standard setter.

The researchers can investigate the link between information timeliness and mispricing of earnings components and also the relationship between reliability of information and mispricing of earnings components in the future.

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