

# The effect of cas39 on fair value measurement and analysts' earnings forecast accuracy – a study based on the multiple linear regression model

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**Abstract.** In order to examine the effect of CAS 39, this article used the data of Chinese A-share listed companies from 2012 to 2015 and analyzed the relationship between changes in fair value and the analysts' earnings forecast accuracy before and after the implementation of CAS39. The empirical results showed that the adverse effect of changes in fair value on the accuracy of analysts' earnings forecast was significantly weakened after the implementation of CAS39. And further study from the perspective of the nature of property rights and industry categories found that the effect of CAS39 in the state-owned firms and financial industry is significantly better than in non-state-owned firms and non-financial industries.

**Key words.** CAS39, Fair value measurement, Analysts' earnings forecast accuracy.

## 1. Introduction

Fair value measurement was introduced in China since 1990. But the immaturity of China's capital market and the lack of independent fair value standards led numerous companies to take advantage of fair value measurement uncertainty to manipulate earnings and whitewash financial statements. To standardize the use of fair value measurement, the Ministry of Finance formally promulgated the "Accounting Standards for Business Enterprises No. 39 – Fair Value Measurement" (CAS39), so as to provide an unified standard for the use of fair value measurement in China.

Has CAS39 improved the application of fair value measurement and the quality of accounting information? Securities analysts are equipped with professional financial knowledge and advanced analytical skills and the most important sources of data for analysts' earnings forecasts is financial statements disclosed by companies. The results of earnings forecasts are closely related to the quality of accounting information. Therefore, it is meaningful to examine the effect of CAS39 in improv-

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ing the quality of accounting information from companies' external perspective and provide reliable empirical evidence for the further implementation and perfection of the standard by analyzing the impact of changes in fair value on analysts' earnings forecast accuracy before and after the implementation of CAS39.

## 2. Literature Review

Fair value has been widely concerned by the theoretical and practical cycles since it was introduced in China. Bhushan R (1989) examined the synchronization between the fair value standard and the stock price from the perspective of the cyclical effect. He found that when the market trend is in an upturn, the use of fair value rules will push up the stock price; and when the market trend is in a downturn, the use of fair value rules will not have a significant impact on stock price volatility. Eames M and Glover S (2003) pointed out that there were still many obstacles existed in the practical application of fair value and the main reason is accounting standards on the fair value scattered in many specific standards and there was not an unified standard of fair value which caused confusion in the use of fair value. So it is urgent to develop and issue a systematic and scientific fair value standard.

The application of fair value measurement is different in different property rights companies and different industries. But there are few literatures exploring from this two aspects. Therefore, this paper divided the samples according to property rights and the financial and non-financial industries respectively, in order to further examine the effect of CAS39s.

## 3. Hypotheses

A series of provisions in CAS39 on the confirmation and measurement of fair value is beneficial to avoid earnings management by abusing the fair value measurement, thereby improve the quality of accounting information. And CAS39 also put forward higher requirements on the disclosure of fair value information which further limits the motivation of earnings management. Therefore, we expected that after the formal implementation of CAS39, the improper use of "changes in fair value gains and losses" and "assets impairment loss" would be relieved and the reliability of accounting information would be improved, so that the resulting high quality accounting information could mitigate the negative impact of changes in fair value on analysts' earnings forecast accuracy. Therefore we hypothesized the following:

Hypothesis 1. From the perspective of the full sample, the implementation of CAS39 has reduced the negative impact of changes in fair value on the analysts' earnings forecast accuracy.

State-owned firms greatly differ from non-state-owned firms in strategic objectives, organizational structure and other aspects. State-owned firms are directly controlled by the central government. Based on the consideration of various objectives, the motivation of earnings management of the state-owned firms is relatively smaller. The lower level of earnings management means higher accounting informa-

tion quality. Due to the administrative power of supervision, state-owned firms will be more stringent on the implementation of relevant accounting standards issued by the government. Therefore, CAS39 is more likely to be effectively implemented in state-owned firms. Therefore we hypothesized the following:

Hypothesis 2. From the perspective of property rights, compared with non-state-owned firms, the implementation of CAS39 in state-owned firms has more significantly reduced the negative impact of changes in fair value on the analysts' earnings forecast accuracy.

The fair value measurement is widely used in the financial industry and the particularity of the assets in financial institutions has a great impact on the quality of their accounting information. As the financial industry plays a decisive role in the smooth operation of national economy, the government and relevant departments strictly regulate the operation of financial institutions and their implementation of relevant standards and policies so as to avoid the financial information distortion caused by investment crisis. Therefore, we expected that compared with non-financial industries, the effect of CAS39 to reduce the negative impact of changes in fair value on the analysts' earnings forecast accuracy got better played in financial industry. Therefore we hypothesized the following:

Hypothesis 3. From the perspective of industry category, compared with non-financial industries, the implementation of CAS39 in financial industry has more significantly reduced the negative impact of changes in fair value on the analysts' earnings forecast accuracy.

## 4. Data and research design

### 4.1. *Sample selection*

For the purpose of examining the effect of CAS39, we made a comparative analysis of two years before and after the promulgation of CAS39. The study range is from 2012 to 2015. The data was processed as follows: (??)1 excluding ST and ST\* listed companies; (??)2 removing missing and abnormal data. After the above screening, the number of samples is 1501 in 2012, 1007 in 2013, 1243 in 2014, 1384 in 2015 and the total number of samples in 4 years is 5135.

The data used in this article is derived from the CSMAR database. We used STATA 12.0 and EXCEL 2007 to process data and conduct empirical tests.

### 4.2. *Measure for analysts' earnings forecast accuracy*

The analysts' earnings forecast accuracy (AEFA) is selected as the dependent variable. Based on the method from <sup>[5]</sup> Malloy (2005), we calculated the analysts' earnings forecast accuracy by using the analysts' forecast price-earnings ratio and firms' real price-earnings ratio. As the China's Securities Regulatory Commission stipulates that listed companies must publish their financial statements for the previous year before April 30 each year, our data of analysts' earnings forecast for T year is taken from Analyst Earnings Forecast Reports released from April 30 in T

year to April 30 in (T+1) year. For the sake of understanding, we use the inverse of the absolute value of the deviation between the predicted value and the actual value to represent forecast accuracy. The greater the value, the more accurate the forecast result is. Calculated as follows:

$$AEFA_{ijt} = -|FPE_{ijt} - APE_{it}| / |APE_{it}|$$

$AEFA_{ijt}$  means the forecast accuracy of Analyst j for the price-earnings ratio in T year of Company i.  $FPE_{ijt}$  means the predicted price-earnings ratio in T year from Analyst j for Company i.  $APE_{it}$  means the actual price-earnings ratio of Company i in T year.

### ***4.3. Measure for changes in fair value***

The Changes in fair value (CFV) is selected as the independent variable. It represents the degree of fair value changes in assets and liabilities including "changes in fair value gains and losses" and "assets impairment loss". These two accounting subjects basically cover the majority of assets value changes on the profit and loss. Calculated as follows:

$$CFV_{it} = (|Fair_{it}| + |Impair_{it}|) / Asset_{it}$$

$CFV_{it}$  means changes in fair value of Company i in T year adjusted by the year-end total assets.  $Fair_{it}$  means the amount of changes in fair value gains and losses of Company i in T year.  $Impair_{it}$  means the amount of assets impairment loss of Company i in T year.  $Asset_{it}$  means the year-end total assets of Company i in T year.

### ***4.4. Model specification***

$$AEFA_{it} = \alpha + \beta_1 CFV_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 ROA_{it} + \beta_5 PRED_{it} + \beta_6 LEPS_{it} + \beta_7 BOARD_{it} +$$

Table 1 Definition of variables

Type	Variables	Definitions
<b>Dependent variable</b>	AEFA	The proximity between the forecast price-earnings ratio of Analyst j for Company i in T year and the actual price-earnings ratio of Company i in T year
<b>Independent variable</b>	CFV	Changes in fair value of Company i in T year adjusted by total assets
<b>Control variables</b>	SIZE	The natural logarithm of the total assets of the firm
	LEV	Total liabilities/ total assets
	ROA	Operating profit/ total assets
	PRED	The total profit deducted from non-recurring gains and losses/ the total profit
	LEPS	Last year's earnings per share
	BOARD	The number of the board directors
	FIRST	Shareholding ratio of the largest shareholders
	STDEV	Standard deviation of earnings per year over the past 3 years
	YEAR	Year dummy variable
	IND	Industry dummy variable

## 5. Empirical results

Table 2 lists the regression coefficients, significance levels, adjusted  $R^2$ , F statistic and D-W values of the full sample. These results provide a guarantee for the credibility of the empirical tests. It shows that the regression coefficient of CFV in 2012-2013 is -60.671, which is significant at the 1% level, and the regression coefficient of CFV in 2014-2015 is -19,534, which is significant at the 1% level. It means that the change in fair value has a significant negative impact on the analysts' earnings forecast accuracy. The greater the change in fair value, the lower the forecast accuracy is. The t value of CFV regression coefficient in 2012-2013 is -13.634, and in 2014-2015 is -3.364 which is smaller than that of 2012-2013. It means that the implementation of CAS39 has effectively reduced the negative impact of changes in fair value on the analysts' earnings forecast accuracy. Therefore, the Hypothesis 1 is verified.

Table 2 Regression results of the full sample

	2012-2013		2014-2015	
	Regression coefficients	VIF	Regression coefficients	VIF
<b>CFV</b>	-60.671*** ??-13.634??	1.287	-19.534*** ??-3.364??	1.025
<b>Adjusted-R<sup>2</sup></b>	0.173		0.066	
<b>F-statistic</b>	21.149***		7.919***	
<b>D-W</b>	2.025		1.801	

We divided the samples into state-owned firms and non-state-owned firms by property rights. The results are shown in Table 3. In the state-owned firms, the regression coefficient of CFV in 2012-2013 is -55.314, which is significant at the 1% level, and in 2014-2015 is -21.144, which is non-significant. It indicates that the implementation of CAS39 reduced the negative effect of changes in fair value on analysts' earnings forecast accuracy. In the non-state-owned firms, the regression coefficient of CFV in 2012-2013 is -59.290, which is significant at the 1% level, and in 2014-2015 is -16.029, which is significant at the 1% level. It indicates that the implementation of CAS39 in non-state-owned firms has reduced the negative impact of changes in fair value on the analysts' earnings forecast accuracy, but the effect is not as significant as in the state-owned firms. Therefore, the Hypothesis 2 is verified.

We divided the samples into financial industry and non-financial industries. The results are shown in Table 4. In the financial industry, the regression coefficient of CFV in 2012-2013 is -7.920, which is significant at the 5% level, and in 2014-2015 is -5.688, which is non-significant. It shows that both the coefficients and the significance level have decreased significantly after the implementation of CAS39, indicating that the implementation of CAS39 has reduced the negative impact of CFV on AEFA. In the non-financial industries, the regression coefficient of CFV in 2012-2013 is -4.359, which is significant at the 5% level, and in 2014-2015 is -4.694, which is significant at the 10% level. In terms of the significance, the implementation of CAS39 has reduced the impact of CFV on AEFA, but the effect is not significant in terms of the coefficients. Thus, in general, compared with non-financial industries, the implementation of CAS39 in the financial industry has played a more significant role in reducing the negative impact of changes in fair value on the analysts' earnings forecast accuracy. The Hypothesis 3 is verified.

Table 3 Regression results of the samples grouped by property rights

	State-owned firms		Non-state-owned firms	
	2012-2013	2014-2015	2012-2013	2014-2015
<b>CFV</b>	-55.214*** (-5.273)	-21.144 (-1.075)	-59.290*** (-14.490)	-16.029*** (-4.189)

Table 4 Regression results of the samples grouped by industries

	Financial industry		Non-financial industries	
	2012-2013	2014-2015	2012-2013	2014-2015
<b>CFV</b>	-7.920** (-2.441)	-5.688 (-1.441)	-4.359** (-2.062)	-4.694* (-1.792)

## 6. Robust test

In order to verify the reliability of the research results, this article made some adjustments to the measurement methods of the variables, and constructs a new regression model. The new interpreted variables are as follows.

$$\text{Prec\_eps}_{ijt} = -|FEPS_{ijt} - AEPS_{it}|/|AEPS_{it}|$$

In addition, two new variables, IAS and CFV \* IAS, were added to the original model, thereby constructing a new regression model as follows.

$$\text{Prec\_eps}_{it} = \alpha + \beta_1 \text{CFV}_{it} + \beta_2 \text{CFV} * \text{IAS}_{it} + \beta_3 \text{IAS}_{it} + \beta_4 \text{SIZE}_{it} + \beta_5 \text{LEV}_{it} + \beta_6 \text{ROA}_{it} + \beta_7 \text{LEPS}_{it} + \beta_8 \text{LEPS} + \beta_9 \text{BOARD}_{it} + \beta_{10} \text{FIRST}_{it} + \beta_{11} \text{STDEV}_{it} + \beta_{12} \text{SYEAR}_{it} + \beta_{13} \text{IND}_{it} + \varepsilon_{it}$$

results of the robustness test are consistent with the above assumptions. Data is not displayed due to space constraints

## 7. Conclusion

This article explored the impact of changes in fair value on the analysts' earnings forecast accuracy prior to and after the implementation of CAS39 from the perspective of the full sample, property rights and industry category, so as to examine the effect of the CAS39. We drew the following conclusions: (1) From the perspective of the full sample, the implementation of CAS39 has reduced the negative impact of changes in fair value on the analysts' earnings forecast accuracy; (2) From the perspective of property rights, compared with non-state-owned firms, the implementation of CAS39 in state-owned firms has more significantly reduced the negative impact of changes in fair value on the analysts' earnings forecast accuracy; (3) From the perspective of industry category, compared with non-financial industries, the implementation of CAS39 in financial industry has more significantly reduced the negative impact of changes in fair value on the analysts' earnings forecast accuracy.

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Received November 16, 2017