Scientific Research Publishing

Will the Change from Four to Three Classifications of Financial Assets Lead to a Substitution of Accrual Earnings Management for Real Earnings Management?

Congyue Luo

School of Economics & Management, Shanghai Maritime University, Shanghai, China
Email: 309154314@qq.com

Abstract

This paper investigates the substitution between accrual earnings management and real earnings management of listed companies after the change from four to three classifications of financial assets in China. This paper divides the financial data of A + H listed companies in China into two groups for the period of 2015-2020, considering the implementation of the Financial Instruments Standard as the time point, and investigates the impact of the change from four to three classifications of financial assets on the earnings management of financial assets of listed companies through OLS regression analysis and suest test. The results of the study show that after the change from four to three classifications of financial assets, the manipulation of financial asset classifications and derecognition of financial assets by listed companies decreased, and the manipulation of fair value measurement of financial assets increased; at the same time, the proportion of financial assets at fair value through profit or loss held by listed companies was significantly and positively related to the level of accrual earnings management.

Keywords

Financial Assets, Reclassification from Four to Three, Fair Value Hierarchy Measurement, Earnings Management

1. Introduction

The phenomenon of earnings management has always been a hot issue in accounting theory, which mainly includes accrual earnings management and real earnings management. Accrual earnings management means manipulation of ac-

counting information mainly through the choice of accounting policies and accounting estimates; real earnings management manipulates the level of earnings by affecting the inflow and outflow of economic benefits through real transaction arrangements. Accrual and real earnings managements are used interchangeably by companies to manipulate profits (Zang, 2012).

Badertscher (2011) finds that in order to increase the valuation of a company, management implements accrual earnings management first and implements real earnings management in subsequent years. Li, Zheng and Lian (2011) argue that in the process of equity refinancing, listed companies will implement both accrual and real earnings management, and the choice of earnings management method is often influenced by the cost-benefit principle. Zang (2012) found that the degree of accrual earnings management was negatively related to the cost of accrual earnings management and positively related to the cost of real earnings management; at the same time, the degree of real earnings management was negatively related to the cost of real earnings management and positively related to the cost of accrual earnings management. Cai et al. (2012) examined the impact of different earnings management approaches on the improvement of the situation of dying firms and found that the more implicit the earnings management behaviour of dying firms is, the more beneficial it is to improve their situation, while the cost of real earnings management is higher and more damaging to the future value of the firm. Yuan and Jie (2016) analyzed the partial substitution of real earnings management for accrual earnings management based on a cost-benefit theory perspective and found that the cost of real earnings management and the level of accrual earnings management are positively correlated and that corporate managers consider the cost of both when choosing the earnings management approach.

In addition, revisions to standards often lead to changes in the cost of earnings management. Gong et al. (2015) use theoretical and empirical studies to verify the partial substitution of real earnings management for accrual earnings management due to the increase in the cost of accrual earnings management after the removal of the provision for impairment of long-lived assets in China in 2007. The above literature provides a good basis for this paper. On 31 March 2017, the Ministry of Finance of China issued a revised standard on financial instruments and required A + H listed companies to implement it from 1 January 2018. The change from four to three classifications of financial assets will effectively affect the earnings management behaviour of financial assets. Therefore, this paper examines the partial substitution between accrual earnings management and real earnings management of A + H-listed companies after the revision of the Financial Assets Standard from the perspective of the reclassification of financial assets into three classifications from four classifications. This paper finds that, after the change from four classifications to three classifications, the real earnings management of financial assets decreases and the accrual of earnings management increases as the cost of real earnings management increases for listed companies. In particular, after the change of the classification of finan-

cial assets from four to three, the manipulation of financial asset classifications and derecognition of financial assets by listed companies decreased and the manipulation of fair value of financial assets increased; at the same time, the increase in the manipulation of fair value of financial assets was positively correlated with the proportion of financial assets at fair value through profit or loss in hierarchy 3 of fair value measurement. The increase in fair value manipulation of financial assets is also significantly and positively correlated with the proportion of financial assets measured at fair value through profit or loss in hierarchy 3.

Effective curbing of earnings management is bound to be a perennial issue. The implementation of the new standard will give rise to a series of responses by companies due to their earnings management instincts. The research in this paper could help to identify the responses of companies arising from changes in the classification of financial assets so that the related policies could be better improved.

The paper is organized as follows. Section 2 shows the literature review and theoretical analysis. Section 3 presents the hypothesis Section 4 and Section 5 respectively focus on empirical research design and Analysis of the empirical results. Section 6 is the conclusion of the paper, where related recommendations are offered.

2. Literature Review and Theoretical Analysis

According to the process of recognition, holding and disposal of financial assets, the main methods of earnings management of financial assets measured at fair value include manipulation of financial asset classifications, manipulation of fair value measurement of financial assets and manipulation of derecognition of financial assets (Mao & Xu, 2018). The three methods will affect the level of accrual earnings management and the level of real earnings management of enterprises to different degrees, due to their respective characteristics. The real earnings management can be achieved through manipulation of financial asset classifications and derecognition of financial assets, while fair value manipulation of financial assets is used to achieve accrual earnings management. As less identifiable earnings management practices give management larger space for earnings management (Cang et al. 2011), management has a more pronounced preference towards real earnings management. Shilo Lifschutz (2002) studied the earnings management behaviour of the US banking industry after the promulgation of SFAS 115 and found that profit transactions on available-for-sale financial assets were associated with banks' current profits. The study by Dong and Zhang (2009) also demonstrates the existence of "profitable" trading behaviour in the banking industry, where banks usually choose to trade financial assets that perform well in the market The study also found that the banking sector has a "gains" trading behaviour, where banks usually choose to trade in financial assets that perform well in the market to gain. It has also been found that listed companies have the

behaviour of turning a loss into a profit by disposing of available-for-sale financial assets in the year of loss (Zhao, 2006); if they cannot manage it, listed companies will choose to delay the disposal in order to achieve a corporate "clean-up" in future periods (Dai et al., 2005). Ye et al. (2009) studied the initial classification of financial assets and their earnings management behaviour during the holding period, and found that listed companies with a large number of trading and available-for-sale financial assets tended to classify financial assets as available-for-sale financial assets in order to create a "reservoir" for earnings management. During the holding period, in order to avoid a decline in profits, management may dispose of the available-for-sale financial assets in the short term, contrary to the initial intention of holding them. Li et al. (2018) demonstrated through a case study that the holding and classification of financial assets in listed company A had a tendency of earnings management, and the article found that the proportion of available-for-sale financial assets in listed company A remained at a high level through a longitudinal comparison of company information; at the same time, listed company A also released profits and whitewashed its financial statements by alternately reducing its holdings of different available-for-sale financial assets.

Prior to the amendment of the standard, the preference of listed companies for financial assets measured at fair value through other comprehensive income was closely related to the characteristics of such financial assets.

For financial assets measured at fair value through other comprehensive income, the book profit or loss during the holding period was only recorded in capital reserves and did not affect management achieving the objective of profit smoothing (Sun, 2010); when an enterprise faced the risk of a decline in profit, management could transfer the book profit or loss during the holding period to investment income and generate real cash flows through the opportunistic sale of such financial assets (Ye et al. 2009). When a company faces the risk of a decline in profits, the management can sell such financial assets at its own discretion, so that the book earnings during the holding period can be transferred to investment income and generate real cash flows (Ye et al. 2009). In other words, companies that hold financial assets at fair value through other comprehensive income usually have the ultimate goal of achieving real earnings management. The carrying amount of financial assets at fair value through profit or loss will be reflected in the "fair value gain or loss" item in the income statement of the company, which makes it difficult to smooth profits and does not allow for manipulation of the timing of the recognition of gains on the assets through opportunistic sales.

The change from four to three classifications of financial assets following the amendment to the Financial Instruments Standard will change this situation. Prior to the amendment, enterprises could classify financial assets based on the manager's intention and ability to hold them, which was highly subjective, whereas the new standard requires managers to recognize different classifications of fi-

nancial assets based on the business model for managing the financial assets and the contractual cash flow characteristics of the financial assets, a change that significantly reduces the level of subjective involvement of managers, who recognize financial assets measured at fair value through other comprehensive income. The recognition by management of financial assets measured at fair value through other comprehensive income will be restricted by the new standard, and it will be significantly more difficult for enterprises to opportunistically dispose of such assets.

The academic literature shown above mainly focuses on the earnings management characteristics under the standard before modification. However, there are few papers written to discuss the changes of earnings management behaviour of the companies affected by the new standard, of which this paper attempts to make an elaboration and explanation, helping identify potential parts of the standard of financial instruments that need to be further refined.

3. Hypothesis

The choice between accrual earnings management and real earnings management often depends on the respective benefits and costs of the two types of earnings management.

Firstly, analyzing costs and benefits of the two types of earnings management before the change from four to three classifications of financial assets. As for benefits, whether financial assets are recognized at fair value through profit or loss or at fair value through other comprehensive income, the objective of manipulating profits can be achieved to varying degrees, but recognizing financial assets in the latter classification is more conducive to smoothing profits and influencing cash flows through asset disposal when required. As for costs, accrual of earnings management does not require real transactions, but the measuring techniques of financial assets are asked to be disclosed in the statements, and if they are not in accordance with reality, they will be easily detected and punished by the regulator.

Next, we analyzed the costs and benefits of the two types of earnings management after the change from four to three classifications of financial assets. In terms of benefits, there is no material difference before and after the revision of the guidelines; however, in terms of costs, the clear and objective basis for classifying financial assets is more conducive to regulators and institutions to evaluate the reasonableness of the classification of financial assets, which increases the cost of real earnings management and makes it difficult for management to carry out manipulation of financial asset classifications and derecognition of financial assets with the objective of real earnings management. As a result of the increased cost of real earnings management, management will alternatively consider implementing accrual earnings management, i.e. fair value measurement manipulation of financial assets. This approach is achieved through a fair value hierarchy of financial assets at fair value through profit or loss. The fair value

hierarchy plays a key role in the reliability of fair value measurements (Ge, 2009). The reliability of fair value measurements in level 3 is relatively weaker than in level 1 and level 2 due to the different input requirements of each level (Song et al., 2010). As companies hold more financial assets at fair value through profit or loss, they are more likely to disclose more financial assets in level 3 of the fair value hierarchy. Based on the above analysis, the following hypotheses are formulated.

H1: Manipulation of the classification of financial assets and derecognition of financial assets by listed companies decreased after the change from four to three classifications;

H2: Manipulation of the fair value of financial assets by listed companies increased after the change from four to three classifications.

H3: After the change from four to three classifications, fair value manipulation of financial assets by listed companies is significantly and positively correlated with the proportion of financial assets at fair value through profit or loss in level 3 of fair value measurement.

4. Empirical Research Design

1) Sample and data

This paper selects the financial data of A + H listed companies in China from 2015 to 2020 as the research samples, and makes the following treatment: excluding listed companies in the financial sector; excluding ST listed companies; and excluding listed companies holding financial assets measured at fair value which are hold less than the period required in this paper by confirming the financial statement data in the notes to the statements, so as to obtain the data of 36 listed companies in total. In addition, considering the implementation of the new financial instruments standard for A + H listed companies from 1 January 2018, the beginning of 2018 is considered as the cut-off point, 2018-2020 as the study window and 2015-2017 as the control window, in order to test the partial substitution of accrual earnings management for real earnings management after the change from four to three classifications of financial assets.

2) Selection of variables and model design

a) Measurement of accrual earnings management

In this paper, we refer to the modified Jones model (Dechow et al., 1995) to measure accrual earnings management. This is done by deriving the correlation coefficients from model (1-1), carrying them through to model (1-2) and finally estimating the level of accrual earnings management through model (1-3). $TA_{i,t}$ is the total accrued profit of company i at the end of period t; $AST_{i,t-1}$ is the total assets of company i at the end of period t; $\Delta REV_{i,t}$ is the difference between revenue of company i at period t and revenue at period $t-1$; $\Delta REC_{i,t}$ is the difference between net receivables of company i at period t and net receivables of company i at period $t-1$; $PPE_{i,t}$ is the total fixed assets of company i at the end of period t; $\Delta REC_{i,t}$ is the difference between net receivables of company i at pe-

riod t and net receivables of company i at period $t-1$; $\Delta REC_{i,t}$ is the difference between net receivables of company i at period t and net receivables of company i at period $t-1$. $PPE_{i,t}$ is the total net fixed assets of company i at the end of period t; $NDA_{i,t}$ is the non-manipulated accrued profit in period t adjusted for total assets at the end of period $t-1$; $DA_{i,t}$ represents the manipulated accrued profit of company i in period t and is used to measure the level of surplus management of the company. The model is as follows.

$$\frac{TA_{i,t}}{AST_{i,t-1}} = \eta_1 \frac{1}{AST_{i,t-1}} + \eta_2 \frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{AST_{i,t-1}} + \eta_3 \frac{PPE_{i,t}}{AST_{i,t-1}} + \varepsilon_{i,t} \qquad (1\text{-}1)$$

$$\frac{NDA_{i,t}}{AST_{i,t-1}} = \eta_1 \frac{1}{AST_{i,t-1}} + \eta_2 \frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{AST_{i,t-1}} + \eta_3 \frac{\Delta PPE_{i,t}}{AST_{i,t-1}} \qquad (1\text{-}2)$$

$$DA_{i,t} = \frac{DA_{i,t}}{AST_{i,t-1}} - \frac{NDA_{i,t}}{AST_{i,t-1}} \qquad (1\text{-}3)$$

b) Models

This paper refers to the model of Mao and Xu (2018) to test the changes in earnings management methods of financial assets. The three financial asset earnings management methods are first identified through each level of fair value measurement, and then the sample is divided into two sub-sample groups for comparison using 2018 as the dividing time point to test hypothesis 1 and hypothesis 2. Model (2) is now constructed as follows.

$$\begin{aligned}
FVEM_{i,t} = {} & \alpha_1 + \alpha_2 FV1_{i,t} + \alpha_3 FV2_{i,t} + \alpha_4 FV3_{i,t} + \alpha_5 SIZE_{i,t} + \alpha_6 AR_{i,t} \\
& + \alpha_7 CFO_{i,t} + \alpha_8 GROWTH_{i,t} + \alpha_9 ROA_{i,t} + \alpha_{10} ROE_{i,t} \\
& + \alpha_{11} RRec_{i,t} + Year + Ind + \varepsilon_{i,t}
\end{aligned} \qquad (2)$$

Meanwhile, to test hypothesis 3, model (3) is constructed as follows.

$$\begin{aligned}
FFV_{i,t} = {} & \alpha_1 + \alpha_2 FVTPL_{i,t} + \alpha_3 FVTPL\_FV1_{i,t} + \alpha_4 FVTPL\_FV2_{i,t} \\
& + \alpha_5 FVTPL\_FV3_{i,t} + \alpha_6 SIZE_{i,t} + \alpha_7 AR_{i,t} + \alpha_8 CFO_{i,t} \\
& + \alpha_9 GROWTH_{i,t} + \alpha_{10} ROA_{i,t} + \alpha_{11} ROE_{i,t} + \alpha_{12} RRec_{i,t} \\
& + Year + Ind + \varepsilon_{i,t}
\end{aligned} \qquad (3)$$

The explanatory variable FVEM represents the earnings management of financial assets associated with fair value measurement, including manipulation of financial asset classes (AFS), manipulation of fair value valuation of financial assets (FFV) and manipulation of derecognition of financial assets (IE). AFS is expressed as the ratio of financial assets measured at fair value through other comprehensive income to total assets at the beginning of the period, FFV is expressed as the ratio of gain or loss from changes in fair values to total assets at the beginning of the period, and IE is expressed as the ratio of investment income to total assets at the beginning of the period, where investment income excludes investment income generated by associates and joint ventures.

The explanatory variables FV1, FV2 and FV3 are the proportion of financial assets measured at fair value to total assets at the beginning of the period for each level. FVTPL_FV1, FVTPL_FV2 and FVTPL_FV3 represent the interaction

items of the proportion of financial assets measured at fair value through profit or loss to total assets at the beginning of the period and the proportion of fair value measurement of such financial assets for each level, respectively.

Control variables refer to control variables commonly used in existing studies. Company size $SIZE_{i,t}$ is expressed as the natural logarithm of the company's total book assets at the end of the year; net cash flow from operating activities $CFO_{i,t}$ is measured as the absolute value of net cash flow from operating activities for the year; solvency is measured by gearing ratio $LEV_{i,t}$ and quick ratio $AT_{i,t}$; profitability is measured by return on total assets $ROA_{i,t}$ and return on net assets $ROE_{i,t}$. Growth is measured by the growth rate of total assets at the end of the year compared to the balance at the beginning of the year, $GROWTH_{i,t}$. Investment efficiency is measured by the receivables ratio, $RRec_{i,t}$. Year effects (Year) and industry effects (Ind) are also considered.

The descriptions and definitions of the main variables of model (1) - model (3) are shown in Table 1 below.

In order to test the extent to which the explanatory variables affect the explained variables in different periods, the sample is divided into two sub-samples for testing and comparing the differences in the coefficients of the two sub-samples for each model. To avoid possible bias from comparing only the significance levels of the coefficients of the subsamples, this paper analyses whether the differences in the coefficients of the explanatory variables between the two subsamples of each model are significant by supporting the seemingly uncorrelated test (suest test) for panel data (Lian & Liao, 2017).

5. Analysis of the Empirical Results

1) Analysis of financial asset holding characteristics

To better understand the results of the empirical analysis, the analysis of financial asset holding characteristics is shown in this part. Figures 1-3 are all based on the data and information disclosed in the financial statements for the selected sample companies obtained from Shanghai Stock Exchange and Shenzhen Stock Exchange, which have then been calculated and converted into the graphical form.

Figure 1 illustrates the change in the proportion of each type of financial asset to total assets at the beginning of the year for each of the three years before and after the change in the four classifications of financial assets to three classifications for the period 2015-2020 for the selected sample companies, obtained through the relevant data in the financial statements. An explanation of the legend to Figure 1 is provided in Table 2. As shown in Figure 1, compared to 2017, financial assets from financial assets at fair value through other comprehensive income decreased significantly as a percentage of total assets at the beginning of the period in 2018, and still remained at a lower level in subsequent years, indicating that management's efforts to achieve real earnings management through the recognition of financial assets at fair value through other comprehensive income were limited. The opposite is true for financial assets at fair value

Table 1. The descriptions and definitions of the main variables.

Names of variables	symbol	Definitions of variables
Accrual Earnings Management	DA	Manipulative accrued profits
manipulation of financial asset classes	AFS	Financial assets at fair value through other comprehensive income (available-for-sale financial assets, before the amendment to CAS22) as a percentage of total assets at the beginning of the year
manipulation of fair value valuation	FFV	Gains or losses on changes in fair value/total assets at beginning of period
manipulation of derecognition of financial assets	IE	(Investment income—investment income in associates and joint ventures)/Total assets at the beginning of the year
Percentage of financial assets at fair value through profit or loss	FVTPL	Financial assets at fair value through profit or loss to total assets at the beginning of the year
Percentage of financial assets measured at fair value in hierarchy 1	FV1	Financial assets measured at fair value in hierarchy 1/total assets at the beginning of the year
Percentage of financial assets measured at fair value in hierarchy 2	FV2	Financial assets measured at fair value in hierarchy 2/total assets at the beginning of the year
Percentage of financial assets measured at fair value in hierarchy 3	FV3	Financial assets measured at fair value in hierarchy 3/total assets at the beginning of the year
Size of companies	SIZE	Natural logarithm of the company's total assets at the end of the year
Net cash flow from operating activities	CFO	Net cash flows from operating activities at the end of the year
Gearing ratio	LEV	Ratio of total liabilities to total assets at the end of the year
Quick ratio	AR	Quick assets at year end/Current liabilities at year end
Return on total assets	ROA	EBIT/average total assets
Return on net assets	ROE	EBIT/average shareholders' equity
Corporate growth	GROWTH	Growth in total assets for the year compared to total assets for the previous year
Receivable ratio	RRec	Receivables at the end of the year/average total assets
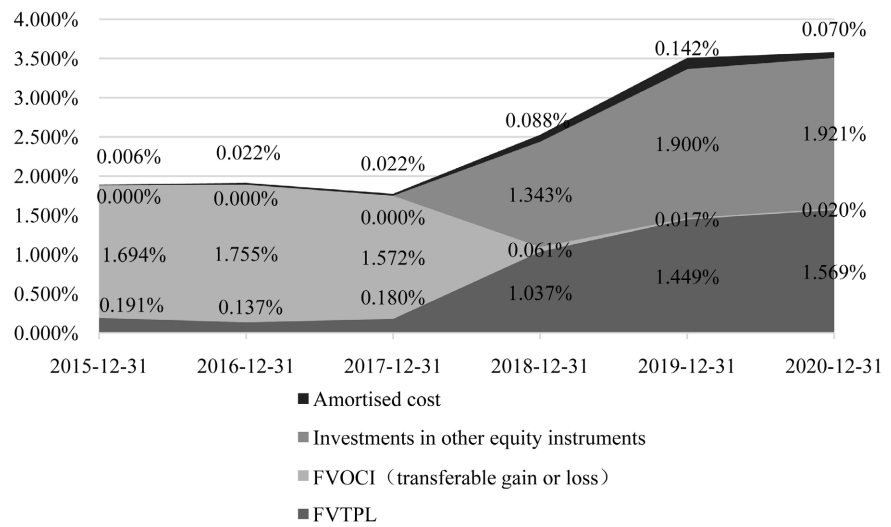
Figure 1. Change in the share of each type of financial asset, 2015-2020.
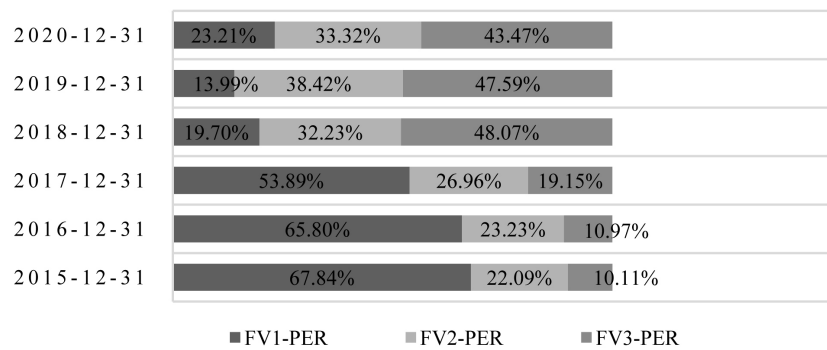
Figure 2. Change in the proportion of financial assets measured at fair value by level, 2015-2020.

Figure 3. Change in share of FVTPL and FVOCI by tier, 2015-2020.

through profit or loss, where the proportion of financial assets at fair value through profit or loss as a percentage of total assets at the beginning of the period increased significantly in the year in which the four classifications of financial assets were reclassified to three classifications and continued to increase over the subsequent three years.

Table 2. Meaning of Figure 1 illustration.

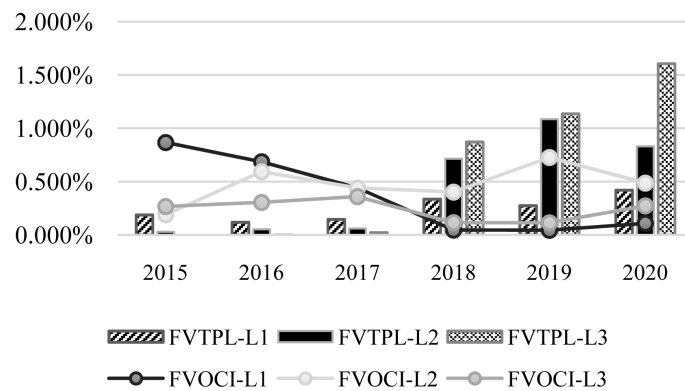| Illustration	Before the revision of the standard	After the revision of the standard
FVTPL	Financial assets at fair value through profit or loss	
FVOCI (Transferable gains and losses)	Available-for-sale financial assets	Financial assets at fair value through other comprehensive income
Investments in other equity instruments	-	Financial assets designated as at fair value through other comprehensive income
Amortised cost	Held-to-maturity investments; Loans and receivables	Financial assets measured at amortised cost

In addition, this paper manually collected information on each hierarchy of financial assets measured at fair value held by the selected sample of companies during 2015-2020 and calculated the percentage of financial assets disclosed at each level in each year, as shown in Figure 2.

"FV1-PER", "FV2-PER" and "FV3-PER" represent the proportion of financial assets in hierarchy 1, hierarchy 2 and hierarchy 3 respectively. As shown in Figure 2, in the year in which the four classifications of financial assets were changed to three classifications, the proportion of financial assets classified as level 1 decreased and the proportion of financial assets in levels 2 and 3 increased and remained high in subsequent years, with the change in level 3 being particularly significant. In order to further analyze which category or categories of financial assets are responsible for these changes, this paper collates the percentage of total assets at the beginning of the year for each level of the fair value of the two categories of financial assets over the period 2015-2020, as shown in Figure 3.

In terms of the structure of the proportion of each hierarchy, the proportion of financial assets at fair value through profit or loss classified in level 2 and 3 is significantly higher in the period 2018-2020 than in the period 2015-2017; while the proportion of financial assets at fair value through other comprehensive income classified in level 1 decreases significantly.

The data shown above confirms the inferences made in the theoretical analysis section above regarding the changes in the holding characteristics of the two categories of financial assets.

2) Descriptive statistics analysis

Table 3 provides the descriptive statistics of the variables in the model. It can be found that among the explanatory variables, the mean values of AFS are 0.0191 and 0.00736, respectively, which are significantly lower in group (2) than in group (1), while the mean values of FVTPL are 0.00198 and 0.0251 respectively, indicating that the change from four to three classifications of financial assets inhibits the tendency of listed companies to classify financial assets as financial assets measured at fair value The mean values of FFV were 0.000162 and

Table 3. Descriptive statistics.

Variables	Observations	Averages		Standard deviation		Minimum		Maximum	
Groups		(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
DA	216	−0.00319	0.000071	0.0332	0.0326	−0.0988	−0.0910	0.0915	0.114
DEM	216	−0.0683	0.0123	0.182	0.0934	−0.497	−0.212	0.489	0.329
AFS	216	0.0191	0.00736	0.0201	0.0115	0	0	0.107	0.0513
FVTPL	216	0.00198	0.0251	0.00482	0.0349	0	0	0.0336	0.194
FFV	216	0.000162	0.000608	0.00163	0.00269	−0.00649	−0.00598	0.00902	0.0184
IE	216	0.00684	0.00567	0.0157	0.0115	−0.00486	−0.00591	0.100	0.0732
FV1	216	0.00794	0.00805	0.0108	0.0198	0	0	0.0511	0.162
FV2	216	0.00427	0.0150	0.0109	0.0267	−0.0000157	−1.37e−10	0.0603	0.168
FV3	216	0.00333	0.0168	0.00871	0.0288	0	0	0.0452	0.188
SIZE	216	25.54	25.84	1.070	1.084	23.22	23.18	27.78	28.26
CFO	216	1.396e+10	1.544e+10	1.721e+10	1.688e+10	−7.525e+09	−9.215e+09	9.515e+10	8.825e+10
LEV	216	0.606	0.605	0.152	0.155	0.247	0.163	0.892	0.869
AR	216	0.839	0.864	0.456	0.593	0.170	0.142	2.400	4.375
ROA	216	0.0548	0.0564	0.0403	0.0495	−0.128	−0.0888	0.185	0.288
ROE	216	0.147	0.140	0.0936	0.0982	−0.272	−0.240	0.385	0.376
GROWTH	216	0.123	0.0981	0.197	0.134	−0.231	−0.150	1.205	0.818
RRec	216	0.0722	0.0661	0.0798	0.0735	0	0	0.331	0.350

0.000608 respectively, indicating that after the change from 4 to 3 classifications of financial assets, the proportion of gain or loss from changes of fair values to total assets at the beginning of the period increased significantly and fair value valuation manipulation of financial assets of listed companies increased.. The mean, minimum and maximum values of IE have all decreased to a certain extent after the change from four to three classifications of financial assets, indicating a decrease in investment income generated by the disposal of financial assets and a decrease in the manipulation of derecognition of financial assets by listed companies between 2018 and 2020. The mean value of DA was −0.00319 and 0.000071 respectively, which means the level of accrual earnings management of enterprises increased slightly after the change from four classifications to three classifications of financial assets.

Of the explanatory variables, FV1, FV2 and FV3 represent the proportion of financial assets measured at fair value at hierarchy 1, hierarchy 2 and hierarchy 3 to total assets at the beginning of the period, respectively, with a mean value of 0.00794 and 0.00805 for FV1, with no significant changes. The mean and maximum values of FV2 and FV3 have increased significantly, indicating that the change from four to three classifications of financial assets has affected the fair

value measurement hierarchy of financial assets of listed companies

The means of the control variables do not vary significantly. The larger standard deviations for the SIZE and AT groups indicate relatively significant differences in the size and liquidity of the sample companies.

3) Analysis of OLS regression results

Table 4 shown below presents the regression results of model (2), reflecting the changes in financial asset classifications manipulation, financial asset fair value measuring manipulation and derecognition of financial asset manipulation after the change from four to three classifications of financial assets. Table 5 presents the results of the suest test on the coefficients of the explanatory variables of model (2), reflecting the significance of the differences in the coefficients of the two sub-samples.

In group (1) of model (2-1), the coefficients of FV1, FV2 and FV3 are all significantly positive, which reflects that companies tend to classify financial assets as financial assets at fair value through other comprehensive income during the period when four classifications of financial assets has been implemented, where the coefficient of FV1 is greater than the coefficients of FV2 and FV3, indicating that companies generally tend to recognize more financial assets at fair value through other comprehensive income in hierarchy 1 of the fair value stratified measurement. In group (2), the coefficient of FV2 is significantly positive, and the correlation between FV1 and FV3 is weak. The difference between the coefficients of FV1 and FV3 passes the suest test, which means the difference between the coefficients of the two periods is significant, while the coefficient of FV2 does not pass the test, indicating that the difference between the coefficients of the two periods is not significant.

From an overall perspective, the change from four to three classifications of financial assets has significantly reduced the companies' propensity to classify financial assets as financial assets at fair value through other comprehensive income.

In group (1) of model (2-2), the coefficients on both FV1 and FV2 are insignificant and the significance of the coefficient on FV3 is weak, indicating that listed companies have a preference for manipulation of fair value measurement towards financial assets disclosed at hierarchy 3, however, overall fair value valuation manipulation of financial assets is relative less. The coefficient of FV3 in group (2) is significantly positive and the significance of coefficients of FV1 and FV2 is weak, indicating that more of the gain or loss from changes in fair value of listed companies are derived from financial assets measured at fair value in hierarchy 3. In terms of significance, there is an increase in fair value manipulation of financial assets by listed companies; while in terms of coefficient differences, as shown in Table 5, the p-values for FV1 and FV3 are less than 0.01, indicating that the coefficient of FV1 in group (2) is significantly smaller than its coefficient in group (1), while the coefficient of FV3 in group (2) is significantly larger than its coefficient in group (1). The results shows that fair value valuation

Table 4. Regression results on the extent of earnings management in fair value measurement of financial assets.

Models	Model (2-1) AFS		Model (2-2) FFV		Model (2-3) IE	
Groups	(1)	(2)	(1)	(2)	(1)	(2)
FV1	0.682***	−0.030	0.022	−0.037*	0.239*	−0.056
	(4.97)	(−0.57)	(1.38)	(−3.06)	(1.85)	(−0.94)
FV2	0.467***	0.174***	−0.007	0.013	0.090	−0.055
	(3.36)	(3.96)	(−0.47)	(1.30)	(0.69)	(−1.10)
FV3	0.568***	−0.001	−0.038*	0.051***	0.580***	0.053
	(3.11)	(−0.04)	(−1.84)	(5.62)	(3.37)	(1.19)
SIZE	−0.003	−0.000	0.000	−0.000	0.002	0.000
	(−1.38)	(−0.19)	(0.08)	(−1.44)	(0.83)	(0.17)
AR	−0.012***	−0.002	−0.000	−0.000	0.001	0.005
	(−2.95)	(−0.85)	(−0.06)	(−0.74)	(0.20)	(1.48)
CFO	−0.000	−0.000	−0.000	0.000	−0.000	−0.000**
	(−1.10)	(−0.73)	(−0.72)	(0.62)	(−1.47)	(−2.30)
GROWTH	0.020**	0.008	0.000	0.002	0.016**	−0.001
	(2.46)	(1.09)	(0.15)	(1.13)	(2.11)	(−0.17)
ROA	0.140**	0.004	0.003	0.001	0.073	−0.027
	(2.06)	(0.10)	(0.38)	(0.06)	(1.13)	(−0.53)
ROE	−0.040	0.009	0.001	0.001	−0.001	0.028
	(−1.35)	(0.49)	(0.21)	(0.37)	(−0.04)	(1.43)
RRec	0.000	0.051***	−0.003	0.000	−0.032*	−0.042**
	(0.01)	(3.45)	(−1.24)	(0.04)	(−1.72)	(−2.51)
Year	0.001	0.006***	0.000*	0.000	0.000	−0.001
	(0.35)	(4.97)	(1.77)	(1.63)	(0.29)	(−0.58)
Ind	−0.000	−0.000	0.000	0.000	0.000*	0.000
	(−0.37)	(−0.62)	(1.00)	(0.98)	(1.88)	(0.86)
Constant	−1.125	−12.141***	−0.709*	−0.908	−1.008	1.598
	(−0.32)	(−4.97)	(−1.78)	(−1.61)	(−0.30)	(0.58)
Observations	108	108	108	108	108	108
R-squared	0.541	0.372	0.107	0.389	0.335	0.182

t-statistics in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 5. Model (2) Coefficients of explanatory variables suest test results.

Dependent variables	AFS			FFV			IE		
Groups	(1)	(2)	suest (p value)	(1)	(2)	suest (p value)	(1)	(2)	suest (p value)
FV1	0.682***	−0.030	0.0001	0.022	−0.037*	0.0088	0.239*	−0.056	0.0044
FV2	0.467***	0.174***	0.1984	−0.007	0.013	0.1180	0.090	−0.055	0.0270
FV3	0.568***	−0.001	0.0102	−0.038*	0.051***	0.0048	0.580***	0.053	0.1442

manipulation of financial assets by listed companies increased after the change of four classifications to three classifications of financial assets.

The coefficients on both FV1 and FV3 in group (1) of models (2-3) are significantly positive, reflecting a higher propensity to manipulate the derecognition of financial assets measured at fair value for earnings management by listed companies prior to the change from four to three classifications of financial assets. In group (2), the coefficients of FV1, FV2 and FV3 are all insignificant. Meanwhile, according to the results shown by the suest test, the p-value of FV1 is less than 0.01 and the difference between the coefficients of the two groups is significant, which indicates that the change from four to three classifications of financial assets can effectively discourage management from manipulating the derecognition of financial assets. The difference between the two sets of coefficients for FV3 is not significant, but the significance of the coefficient for group (1) is obviously stronger than the significance of the coefficient for group (2). Overall, the change from four to three classifications of financial assets has reduced listed financial asset derecognition manipulation.

The results in Table 4 and Table 5 demonstrate that the change from four to three classifications of financial assets resulted in a decrease in manipulation of financial asset classes and derecognition of financial assets and an increase in fair value valuation manipulation of financial assets by listed companies, which confirms Hypothesis 1 and Hypothesis 2.

Table 6 shows the regression results for model (3), where the sample is also divided into two groups by time for OLS regression and the coefficients and their significance are compared between the two groups. And Table 7 shows the results of the suest test on the coefficients of the explanatory variables of model (3), reflecting the significance of the differences in the coefficients of the two sub-samples. FVTPL_FV1 is significantly negatively correlated with FFV in group (2), but the coefficient of FVTPL_FV1 does not pass the suest test to determine whether there is a significant difference between them; FVTPL_FV2 is not significantly correlated with FFV; FVTPL_FV3 is significantly and positively correlated with FFV in group (2), indicating that the weight of financial assets measured at fair value with changes accounted for in level 3 is positively correlated with fair value valuation manipulation of financial assets. Besides, the p-value of the suest test was less than 0.01, which passed the test, suggesting that the

C. Y. Luo

Table 6. Regression results of fair value measurement of financial assets with earnings management.

Dependent variables	FFV	
Groups	(1)	(2)
FVTPL	0.285***	−0.006
	(3.14)	(−0.44)
FVTPL_FV1	−0.988	−0.513**
	(−0.36)	(−2.21)
FVTPL_FV2	−6.614	0.160
	(−0.99)	(1.25)
FVTPL_FV3	−11.801***	0.478***
	(−4.58)	(4.85)
SIZE	0.000	−0.001*
	(1.20)	(−1.83)
AR	0.000	−0.001
	(0.38)	(−1.11)
CFO	−0.000	0.000
	(−1.07)	(0.64)
GROWTH	0.000	0.001
	(0.59)	(0.77)
ROA	0.004	0.005
	(0.60)	(0.51)
ROE	0.000	0.001
	(0.04)	(0.21)
RRec	−0.003	0.002
	(−1.54)	(0.62)
Year	0.000	0.000
	(1.14)	(0.87)
Ind	0.000	0.000
	(0.12)	(0.90)
Constant	−0.393	−0.437
	(−1.17)	(−0.85)
Observations	108	108
R-squared	0.277	0.436

t-statistics in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 7. Results of the suest test for explanatory variables of model (3).

Dependent variables		DA	
Groups	(1)	(2)	Suest test p Value
FVTPL	0.285***	−0.006	0.1183
FVTPL_FV1	−0.988	−0.513**	0.9275
FVTPL_FV2	−6.614	0.160	0.3423
FVTPL_FV3	−11.801***	0.478***	0.0097

Table 8. Fisher portfolio test for differences in coefficients between fair value measurement of financial assets and earnings management groups.

Hypothesis	Model (2-1) AFS		Model (2-2) FFV		Model (2-3) IE	
Variables	Coefficient differences	p value	Coefficient differences	p value	Coefficient differences	p value
FV1	0.712***	0.006	0.059**	0.040	0.295***	0.007
FV2	0.294*	0.061	−0.021*	0.093	0.145*	0.051
FV3	0.570***	0.000	−0.089***	0.007	0.526***	0.000
SIZE	−0.003	0.181	0.000	0.107	0.002	0.302
AR	−0.009*	0.096	0.000	0.178	−0.004	0.258
CFO	−0.000	0.302	−0.000*	0.058	0.000	0.397
GROWTH	0.012	0.407	−0.002	0.148	0.018	0.138
ROA	0.136	0.147	0.002	0.426	0.100*	0.091
ROE	−0.049	0.115	−0.001	0.452	−0.029*	0.079
RRec	−0.050*	0.056	−0.003	0.124	0.010	0.387
Year	−0.005***	0.000	0.303	0.303	0.001	0.149
Ind	0.000	0.494	0.448	0.448	0.000	0.132
_Cons	11.053***	0.000	0.316	0.316	−2.669	0.147

difference between the two sets of coefficients was significant. Overall, it can be judged that the change in fair value valuation manipulation after the amendment of the standard is mainly driven by financial assets classified in hierarchy 3 of fair value measurement that are measured at fair value through profit or loss. Hypothesis 3 is verified.

4) Robustness test

To further test whether the differences in the coefficients of the explanatory variables of model (2) are significant across time, this paper refers to Cleary (1999) and Lian et al. (2008) to conduct a robustness test using the Fisher's combination test. The original hypothesis of the test is that H: d = 0, namely, there is no significant difference between the coefficients of the groups. The test is im-

plemented in this paper in the following steps:

a) Mixing sample companies n_1 for the period 2015-2017 and sample companies n_2 for the period 2018-2020 to obtain $n = n_1 + n_2$ sample companies;

b) Randomly select n_1 and n_2 companies from this sample of n companies and assign them to the 2015-2017 and 2018-2020 groups;

c) Estimate the coefficients of the explanatory variables in the two subsamples of each hypothesis separately and record the difference in coefficients as di.

d) Repeat steps 2 and 3 for k times (k is taken as 1000 in this paper), and calculate the percentage by which di (i = 1, 2, ..., k) is greater than the actual coefficient difference d to obtain the p-value.

As shown in Table 8, in model (2-1), the differences in coefficients between groups of FV1 and FV3 are significant, which of FV2 is relatively of less significance. In model (2-2), the difference in coefficients between groups is strongly significant for FV3, there is also a relatively significant difference in coefficients between groups for FV1 and a relatively insignificant difference in coefficients between groups for FV2. In models (2-3), the difference in coefficients between groups was significant for FV1 and FV3, and relatively weak for FV2, which is generally consistent with the above.

6. Conclusion

This paper empirically verifies the partial substitution between the two types of earnings management after the change from four classifications to three classifications of financial assets in China. The empirical study concluded the following: after the change from four to three classifications of financial assets, the manipulation of financial asset classes and derecognition of financial assets by listed companies decreased and the manipulation of fair value measurement of financial assets increased; besides, the increase in fair value measurement manipulation of financial assets is significantly and positively correlated with the proportion of financial assets at fair value through profit or loss in hierarchy 3.

Based on the findings shown above, this paper makes the following recommendations: 1) Auditors and relevant regulators should pay more attention to the number of financial assets held at fair value through profit or loss and the reasonableness of their fair value hierarchy, and to the appropriateness of the valuation techniques used by enterprises in valuing financial assets in hierarchy 2 and 3. 2) The revised CAS22 has a relatively effective constraint on the manipulation of the classification and derecognition of financial assets, but attention should still be paid to the relationship between fair value hierarchy and the accrual earnings management by enterprises, and the concern about the accrual earnings management by enterprises after the revision of the Financial Instruments Standard should be strengthened.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

References

Badertscher, B. A. (2011). Overvaluation and the Choice of Alternative Earnings Management Mechanisms. *The Accounting Review, 86,* 1491-1518. https://doi.org/10.2308/accr-10092

Cai, C., Zhu, R., He, H., & Xie, L. F. (2012). Earnings Management Approach Choices, Behavioral Implicitization, and Improvement of Dying Firms' Condition-Empirical Evidence from A-Share Special Treatment Companies. *Accounting Research, No. 9,* 31-39+96.

Cang, Y. T., Chu, Y. Y., & Qi, Z. (2011). External Constraint Monitoring and Spatial Transformation of Corporate Behavior: Reflections Arising from the Subprime Mortgage Crisis. *Management World, No. 6,* 91-104.

Cleary, S. (1999). The Relationship between Firm Investment and Financial Status. *Journal of Finance, 54,* 673-692. https://doi.org/10.1111/0022-1082.00121

Dai, D. M., Mao, X. S., & Deng, P. (2005). A Study of Asset Impairment Provisioning Behavior of Loss-Making Listed Companies in China. *Financial Research, No. 7,* 71-82.

Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting Earnings Management. *Accounting Review, 70,* 193-225.

Dong, M., & Zhang, X. (2009). *Historical Cost or Fair-Value Accounting: Analysis of the Reclassification of Unrealized Holding Gains and Losses for Marketable Securities.* University of Lausanne and University of California.

Ge, J. S. (2009). Exploring Accounting Choice Issues—Fair Value-Oriented Measurement Choices. *Contemporary Accounting Review, 2,* 8-17.

Gong, Q. H., Wu, L. S., & Wang, Y. P. (2015). Partial Substitution between Two Types of Earnings Management. *Economic Research, 50,* 175-188+192.

Li, C. Y., Zhang, Y., Li, X. B., & Liang, S. K. (2018). Earnings Management under Fair Value: Crisis under smooth Profit—A Listed Company A as an Example. *Accounting and Economic Research, 32,* 46-61.

Li, Z. F., Zheng, Y. H., & Lian Y. J. (2011). Equity Refinancing, Earnings Management and Performance Slippage of Listed Companies: A Study Based on the Manipulation of Accruals and Real Activities. *China Management Science, 19,* 49-56.

Lian, Y. J., & Liao, J. P. (2017). How to Test the Difference of Coefficients between Groups after Group Regression? *Journal of Zhengzhou Institute of Aviation Industry Management, 35,* 97-109.

Lian, Y. J., Su, Z., & Ding, Z. G. (2008). Can Cash-Cash Flow Sensitivity Test the Financing Constraint Hypothesis? *Statistical Research, 25,* 92-99.

Mao, Z. H., & Xu, C. (2018). Can Fair Value Hierarchy Measurement of Financial Assets Identify Earnings Management? An Empirical Study Based on Non-Financial Listed Companies in China. *Economic Science, No. 4,* 117-128.

Shilo, L. (2002). The Effect of SFAS 115 on Earnings Management in the Banking Industry. *The Journal of Applied Business Research, 18.*

Song, C. J., Thomas, W. B., & Yi, H. (2010). Value Relevance of FAS No. 157 Fair Value Hierarchy Information and the Impact of Corporate Governance Mechanisms. *The Accounting Review, 85,* 1375-1410. https://doi.org/10.2308/accr.2010.85.4.1375

Sun, M. L., Jiang, Y. X., & Mao, S. S. (2010). A Study on the Determinants of Financial Asset Classifications—Whether Managers' Intention Is the True and Only Criterion. *Accounting Research, No. 7,* 27-31+95.

Ye, J. F., Zhou, L., Li, D. M., & Guo, L. (2009). Management Motivation, Accounting Pol-

icy Choice and Earnings Management: An Empirical Study Based on the Classification of Financial Assets of Listed Companies under the New Accounting Standards. *Accounting Research, No. 3,* 25-30+94.

Yuan, X. Y., & Jie, M. H. (2016). Research on the Choice of Corporate Earnings Management Methods Based on the Perspective of Cost-Benefit Theory. *Macroeconomic Research, No. 8,* 84-96.

Zang, A. Y. (2012). Evidence on the Trade-Off between Real Activities Manipulation and Accrual-Based Earnings Management. *The Accounting Review, 87,* 675-703. https://doi.org/10.2308/accr-10196

Zhao, C. G. (2006). Asset Impairment and Surplus Management: Policy Implications of the "Impairment of Assets" Standard. *Accounting Research, No. 3,* 11-17+96.