Impact of the Change in Accounting Principles on Financial Analysis: Empirical Studies

Cindy Yoshiko Shirata

Professor of Accounting,
Shibaura Institute of Technology
Phone: 81-3-5486-3939
E-mail: shirata@sic.shibaura-it.ac.jp

ABSTRACT

The Japan accounting principles have undergone dramatic changed in recent years, spurring various discussions on how the change in accounting standards brought about by reform affects the economic system. Most empirical studies on the impact of the change in accounting standards published in recent years analyze market-wide impacts, such as the impact on share price. However, it may be difficult to determine that the fluctuations in share price are due to the change in accounting standards (or improvements in the asymmetry of information resulting from the change in accounting standards) because such fluctuations are not solely attributable to the financial condition of the company concerned, but due to a wide range of factors. This study therefore looked into, ways of clarifying the impact of the change in accounting standards on the economic system in a more precise manner. However, as in the case of share price, it is difficult to narrow down the causes of fluctuations in economic indicators to just one, regardless of the type of indicators used. For this reason, an analysis was conducted on the impact of the change in accounting standards on the business finance of individual companies, rather than directly analyzing its impact on the economic system. The analysis involved measuring the impact of the change in accounting standards, by analyzing the effects on an objective indicator, namely, a bankruptcy prediction model, SAF2002 model, using financial variables. The results confirmed that the impact of *other comprehensive income* is considerable, and that many companies are engaged in uncertain accounting practices especially in regards to *deferred tax asset*.

Key words: Change in Accounting Principles, Financial Analysis, Other comprehensive income
Bankruptcy prediction model

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I INTRODUCTION

The Japan accounting principles have undergone dramatic changed in recent years, spurring various discussions on how the change in accounting standards brought about by reform affects the economic system. As accounting standards have to be widely accepted throughout society, the socioeconomic impact of the change in accounting standards must be socially acceptable/desirable, such as being effective in improving the efficiency and fairness of the securities market.

Most empirical studies on the impact of the change in accounting standards published in recent years analyze market-wide impacts, such as the impact on share price[1]. However, it may be difficult to determine that the fluctuations in share price are due to the change in accounting standards (or improvements in the asymmetry of information resulting from the change in accounting standards) because such fluctuations are not solely attributable to the financial condition of the company concerned, but due to a wide range of factors. This study therefore looked into, ways of clarifying the impact of the change in accounting standards on the economic system in a more precise manner. However, as in the case of share price, it is difficult to narrow down the causes of fluctuations in economic indicators to just one, regardless of the type of indicators used. For this reason, an analysis was conducted on the impact of the change in accounting standards on the business finance of individual companies, rather than directly analyzing its impact on the economic system. In particular, there is much room left to study the impact of accounting for *other comprehensive income* on business finance, as represented by the discussions on *net income* and *comprehensive income* in recent years. Disclosure of more information may lead to improvements in the asymmetry of information, and enable information users to make rational decisions. This is the subject of this study.

II. SAMPLE DATA

This empirical analysis involved the use of accounting data of individual companies except financial institutions and insurance companies listed on the First and Second Sections of Tokyo, Osaka and Nagoya Stock Exchanges recorded in the *CORPORATE DATA BANK* of the Japan Development Bank. Fiscal years subject to the analysis were the year ended March 31, 2000 (marked by the introduction of tax effect accounting, which was deemed to be affected substantially by the change in accounting standards) and subsequent years. As financial figures for two consecutive fiscal years were required to calculate financial indicators, data subject to the analysis ultimately consisted of a total of 9,638 cases, spanning from fiscal 2001 to fiscal 2004. The data consisted of

[1] In the U.S., a number of analysis reports on the *economic impact of the change in accounting standards* have been published, especially by the Financial Accounting Standard Board (FASB), but few have been published in the form of research papers. Majoor [1994] evaluated and analyzed the *social value* of accounting standards using cost-benefit analysis adopted by the FASB. In Japan, Suda, et al. [2004] conducted an empirical study.

2,017 cases for 2004, 2,452 cases for 2003, 2,519 cases for 2002 and 2,560 cases for 2001.

III METHODOLOGY

A bankruptcy prediction model called SAF2002 model was used in this study, for the purpose of observing how the change in accounting standards affected business finance. SAF model is a bankruptcy prediction model built by analyzing 1,436 companies which went bankrupt in Japan between 1993 and 2001 by referring to their financial figures in the year immediately before they went bankrupt, and the financial figures of 3,435 companies which stayed in business over the same period by using Classification and Regression Tree (CART), an artificial intelligence technique. The variables used are as shown in Table 1 and the model formula as in Formula 1[2].

TABLE 1: INDICES FOR SAF 2002 MODEL

	Name of Indices	Partial R-Square	F Value	Pr > F
X1	Retained Earnings to Total Assets	0.1671	830.00	<.0001
X2	Interest Expenses to Sales	0.0114	47.56	<.0001
X3	Inventory Turnover Period	0.0593	260.73	<.0001
X4	Net Income before tax to Total Assets	0.0186	78.31	<.0001

$$SAF\ Value = 0.0104X7 + 0.0268\,X10 - 0.0661X37 - 0.0237X26 + 0.7077 \ldots \text{FORMULA 1}$$

The probability of bankruptcy risk of a company can be measured by substituting X1 through X4 in Formula 1 with the indicators in Table 1, and by working out the calculation result SAF value. The analysis results confirm that the bankruptcy risk increases rapidly when SAF value exceeds 0.7. SAF value can also be used for rating companies. Shirata [2003] has verified that SAF rating can be comparable to S&P rating.

SAF value corresponding to the threshold value of each rating is as shown in Table 2. The relationship between SAF rating (based on five grades) and S&P rating is also clearly described in the Table.

TABLE 2: SAF VALUE AT THE THRESHOLD OF EACH RATING
- NON-LISTED V.S. NIKKEI LISTED –

S&P Rating	BBB	A	AA	AAA
SAF Rating	C	B	BB	A
Non-listed firms	0.391315	0.689762	1.009081	1.378331
NIKKEI Listed	0.264002	0.613416	1.042071	1.397863

[2] For the process of sampling financial indicators, refer to pp.168-169 of the *Corporate Bankruptcy Prediction Model* written by the author (published by Chuokeizai-sha, Inc., 2003)

Among the financial variables which constitute SAF2002 model, the greatest contributor to the model is the ratio of *retained earnings to total assets* (*F* value = 830). Further, a strong correlation has been found between S&P and Moody's ratings and the ratio of *retained earnings to total assets*[3]. These facts suggest that there is substantial correlation between SAF2002 model and the ratings of credit-rating agencies.

In a nutshell, retained earnings are crucial elements for the survival and the debt-servicing capabilities (security) of a company. Hence, changes in the company's retained earnings will lead to changes in the bankruptcy probability denoted by its SAF value and its rating.

The change in accounting standards in recent years in Japan has involved a number of procedures which affect the figure of retained earnings. The company's actual financial condition may be blurred as a result of the amount of retained earnings being changed due to the accounting procedures, even though there have been no changes in its actual financial position. To address this, this study looked into whether the changes in financial figures caused by the change in accounting standards are significant enough to distort the decision making of information users.

IV EMPIRICAL ANALYSIS

Analysis Procedures

In new accounting standards, an analysis was conducted on the respective impacts of: *revaluation excess (land revaluation excess + net unrealized gain on securities* [4]) and *deferred tax asset*[5], which are directly applied in the owners' equity that affects retained earnings; *valuation gain on securities*[5], which is incorporated into the owners' equity section through extraordinary gain of Income Statement. Focusing on the gain from forgiveness of debt/debt restructuring occurred frequently in recent years, an analysis was also conducted on the impact of *gain from the debt restructuring,* which is applied as extraordinary gain. Although income from *gain from the debt restructuring* does not actually involve any increase in assets, it has the effect of increasing the amount of retained earnings through net income.

In the analysis, five variations of the ratio of *retained earnings to total assets* were fist calculated with respect to each sample company. The five variations of the ratio of *retained earnings to total assets* are:

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[3] Mizuho Securities Co., Ltd., 2001. Source: Mizuho Securities Credit Commentary 01/11:36.

[4] The net unrealized gain on securities declared directly in the equity section was adopted only when there was a net valuation gain after being offset with a valuation loss. If the net unrealized gain on securities was negative after offsetting, it was assumed to be zero. This is based on the hypothesis that the change in accounting standards expands the scope of the top management's discretion in accounting behavior, and that the incentive for the top management to *opt to* declare a net unrealized gain on securities was to make the company's financial condition *look better*. For this reason, only measured the positive effects was measured.

[5] If deferred tax liabilities were declared, they were offset with deferred tax assets. If only deferred tax liabilities were declared or if the deferred tax liabilities exceeded deferred tax assets, this item was assumed to be zero based on the view that uncertainty is eliminated.

[6] For a conservative estimate, only *valuation gain* was adopted based on the view that it is unlikely for the top management to intentionally make the company's net income appear to be lower than it actually is.

1) The ratio of retained earnings to total assets calculated on the basis of figures in published financial statements, hereinafter referred to as (A);
2) The ratio of retained earnings to total assets calculated by deducting the debited amount of *revaluation excess (land revaluation excess + net unrealized gain on securities)* from retained earnings in 1), hereinafter referred to as (B);
3) The ratio of retained earnings to total assets calculated by further deducting the debited amount of *deferred tax asset* from retained earnings after deduction in 2), hereinafter referred to as (C);
4) The ratio of retained earnings to total assets calculated by further deducting *valuation gain on securities* applied as extraordinary gain from retained earnings after deduction in 3), hereinafter referred to as (D); and
5) The ratio of retained earnings to total assets calculated by further deducting *gain from the debt restructuring* from retained earnings after deduction in 4), hereinafter referred to as (E).

This ultimately involved working out five types of SAF values incorporating these five variations of X1: ratios of retained earnings to total assets with respect to each sample company, and testing the significance of the differences among the five types of SAF values. When calculating SAF values, adjustments were made to the amount of total assets in X2: the ratio of net income before tax to total assets, and for (D) and (E), adjustments were also made to the amount of net income before tax in order to ensure a clean surplus approach.

Data

The analysis was preceded by an investigation of the accounting status of *revaluation excess* and *deferred tax asset* which were placed owners' equity section directly, and *valuation gain on securities* and *gain from the debt restructuring* which were added Income Statements as extraordinary gain. The results were as shown in Table 3. Some companies had actually implemented the accounting procedures for gain from the debt restructuring at a different time from the one published in newspapers, etc.

TABLE 3: ACCOUNTING STATUS

Year (Total Cases)		*revaluation excess*	*deferred tax asset*	*valuation gain on securities*	*gain from the debt restructuring*
2004 (2,017)	cases (%)	1,803 (89)	1,448 (72)	33 (1.6)	10 (0.50)
	amount	9,345	10,614	20	438
2003 (2,452)	cases (%)	1,436 (59)	1,982 (81)	37 (1.5)	17 (0.69)
	amount	5,001	14,392	16	1,119
2002 (2,519)	cases (%)	1,510 (60)	1,962 (78)	32 (1.2)	14 (0.56)
	amount	6,708	13,463	10	157
2001 (2,560)	cases (%)	1,207 (47)	1,994 (78)	57 (2.2)	0 (0)

	amount	6,410	9,559	68	0

Source: Public Financial Statements (Japan 10-K)
Unit of amount: 1 bill yen
Not: Only the positive *revaluation excess* were recognized.

As can be confirmed in Table 3, the applying of deferred tax asset has been decreasing since reaching a peak in 2003, but the amount debited by listed companies on the whole still amount to more than 100 trillion yen. Revaluation excess, which is directly applied in the owners' equity section, is on the increase both in number of cases and in amount; it was confirmed that in 2004, nearly 90% of all companies applied a revaluation excess, and the average amount debited was as much as 5 billion yen per company.

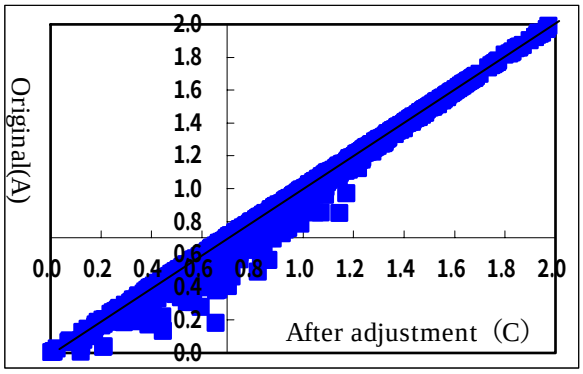

FIGURE 1: BEFORE AND AFTER ADJUSTMENT

Based on these figures, one can confirm that the comparability between the figures applied under the new accounting standards and the financial figures of the previous fiscal years are being undermined by the former. Thus SAF values were calculated without making the adjustments in accordance with the change in accounting standards (A) and SAF values after making adjustments based on *revaluation excess －deferred tax asset* (C) using the 2004 data, and then their distribution was confirmed. Figure 1 illustrates the results.
In Figure 1, the intersection of the X and Y axes was set to 0.7, the point at which bankruptcy is identified. The lower limit was set to zero due to limited display space, even though there were many companies with negative SAF values.

Companies plotted below the 45-degree line are companies whose respective SAF values improved as a result of the change in accounting standards. A close observation of the results reveals that many companies which experienced strong adjustment effects are found around the bankruptcy line at 0.7. On the other hand, companies with an SAF value of 0.4 or lower before adjustment (rated "BBB" or lower) experienced no substantial adjustment effects as their retained earnings had already been exhausted. Blue-chip companies with an SAF value of 1.3 or higher (rated "AAA" or higher) may be deemed to have experienced almost no adjustment effects (they neither perform the procedures at all nor have any procedures which substantially affect the financial figures).

Testing for Statistical Significance

The next step involved testing the significance of the differences among the five types of SAF values calculated by using five variations of the ratio of retained earnings to total assets, namely: retained earnings in the balance sheet (A) minus the debited amount of *revaluation excess* (B); (B) minus the debited amount of *deferred tax asset* (C); (C) minus the debited amount of *valuation gain on securities* (D); and (D) minus the debited amount of *gain from the debt restructuring* (E). Before performing a *T*-test, the standard deviations of two populations ((A) and (B), (B) and (C), (C) and (D), and (D) and (E)) was confirmed by conducting an *F*- test. The results indicated that the standard deviations of two groups are equal.

The significance of the differences among the groups was then tested with respect to annual data. The results showed no significant statistical differences in the comparison between each population in any year. It was thus logical to confirm the median and mean values of each group by depicting them in a graph based on the 2004 data, as illustrated in Figure 2.

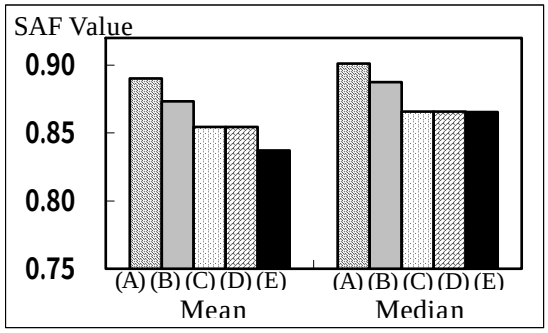

FIGURE 2: BEFORE AND AFTER ADJUSTMENT SAF VALE

As can be confirmed in Figure 2, there is hardly any difference between (C) and (D). This is not surprising, as few companies applied a *valuation gain on securities* and *gain from the debt restructuring* as extraordinary gain in 2004, as shown in Table 3. However, the difference between (A) and (C) is deemed to be significant, considering that many companies applied a *revaluation excess* and *deferred tax asset* in large amounts as can be confirmed in Table 3, and that the difference between (A) and (C) was conspicuous in Figure 2 as well. Therefore, the significance of the difference between (A) and (C) was tested. As (C) equals (A) minus the debited amount of revaluation excess and deferred tax asset, their relationship can always be denoted by (A)>(C). For this reason, all tests conducted here were one-sided. Table 4 shows the results.

TABLE 4: TEST OF SIGNIFICANCE LEVEL -2004 DATA-

	(A)	(C)
Mean	0.890136	0.854453
Variance	0.383735	0.401792
df	4032	
t	1.808148	
P(t)	0.035329	
5%*t*	1.64523	

As stated in Table 4, the difference in the mean of the two populations was tested. The null hypothesis was rejected at a level of 5% for group (C) with adjustments made for *revaluation excess + deferred tax asset* (0.85) and group (A) with *no adjustments made* (0.89), and the difference between two population means were validated to be significant ($t = 1.80$, $df = 4032$, $p<.0353$). To be precise, however, it is necessary to consider multiple comparisons (A vs. B vs. C) as there are three populations subject to comparison in this analysis. In order to avoid type I errors, adjustments were made to the significance level by simply applying Bonferroni adjustments. In short, determining the 5% significance level with respect to each group required the task of observing if the *P* value is smaller than 0.017 (=0.05/3). The observation results revealed no significant difference compared with three groups test. It was confirmed that the applying of *revaluation excess* and *deferred tax asset*—the key elements of other comprehensive income—affects the company valuation in some way, albeit not to the extent of being statistically significant. Similar comparisons were made in the years 2003, 2002 and 2001, but no significant differences were observed at the 5% level in the comparison of the two groups. This leads to the conclusion that especially from 2004 onwards, the impact of the change in accounting standards began to appear and the financial figures became less comparable.

Impact on Financial Distressed Companies

The Sections above aimed at analyzing all listed companies. In this Section, the companies were divided into bankrupt companies, non-bankrupt companies, and companies which received assistance from the Industrial Revitalization Corporation of Japan (IRCJ), and an analysis was conducted on the impact of the change in accounting standards on the financial figures in each category.

1. Analysis of Bankrupt Companies

The sample data consisted of 53 bankrupt companies. Classification of these companies based on SAF2002 model resulted in two companies being misclassified as non-bankrupt companies, leading to a misidentification rate of 3%. However, one of the companies had an SAF value of 0.738 (FOODSNET corporation), which was close to the identification point at 0.7.

Here, the significance of the differences in SAF values based on (A) and (B), (B) and (C), (C) and (D), and (D) and (E) were tested with respect to these bankrupt companies. However, no significant statistical differences were observed in any year. Thus SAF value of each bankrupt company was observed individually, and it was

confirmed that some companies had applied a *revaluation excess*, but as evident in Table 5, most companies had not applied other comprehensive income which was allowed to apply following the change in accounting standards, including deferred tax asset.

TABLE 5: SAF VALUE ONE YEAR PIOR TO BANKRUPTCY

	(A)	(B)	(C)	(D)	(E)
Mean	-0.3558	-0.4040	-0.4247	-0.4247	-0.4247
Median	0.2567	0.2259	0.2134	0.2134	0.2134

Further, the respective SAF values of all companies had deteriorated so much that even if it was charged other comprehensive income into account, their SAF values would not have improved enough to reach the threshold of non-bankrupt companies. This is exemplified by the following observation of Kobe Kiito Co., Ltd., which went bankrupt in February 2003. Kobe Kiito's unadjusted SAF value in the fiscal year immediately before its bankruptcy was -0.4985. When adjusted, Kobe Kiito's SAF value dropped to -0.9584, as it had debited a revaluation excess in the amount of 1.42 billion yen in the fiscal year immediately before its bankruptcy. Put differently, the applying of the revaluation excess had the effect of increasing its SAF value by as much as 0.46. However, Kobe Kiito's was not subject to the test, as its SAF value had already deteriorated to the extent of being an outlier.

2. Analysis of Companies assisted by IRCJ

The data consisted of six companies which received assistance from the IRCJ, namely, Kanebo Ltd., Kimmon Manufacturing Co., Ltd., Dia Kensetsu Co., Ltd., Daiei, Inc., Daikyo Inc. and Mitsui Mining Co., Ltd. The six companies all showed an SAF value of 0.7 or below and were identified as bankrupt companies based on SAF2002 model's identification results. These companies were distinctive in that four out of six of them had debited a huge amount of *gain from the debt restructuring*. Accordingly, a significant difference was observed between (A) and (E). However, it should be noted that the impact of applying *gain from the debt restructuring* on the financial figures was not attributable to the change in accounting standards.

Table 6 shows an example of a company whose SAF value substantially improved by applying *gain from the debt restructuring*. However, as can be confirmed in Table 6, these companies hardly applied any revaluation excess or deferred tax asset.

TABLE 6: SAF VALUE ONE YEAR PRIOR TO BANKRUPTCY

	(A)	(B)	(C)	(D)	(E)
Kimmon	0.4402	0.3492	0.3460	0.3460	0.3460
Daiei	0.6394	0.6095	0.6095	0.6095	0.0255
Daikyo	0.7721	0.7721	0.7721	0.7721	-2.1063
Dia	0.5011	0.5003	0.4856	0.4856	-21.0318

3. Analysis of Non-bankrupt Companies

Lastly, an analysis was conducted on the impact of the change in accounting standards on companies excluding bankrupt companies and companies which received assistance from IRCJ based on all the data (i.e., going concern companies only).

TABLE 7: TEST OF SIGNIFICANCE LEVEL -2004 DATA-

	(A)	(C)
Mean	0.741592	0.702545
Variance	0.286967	0.301068
df	4014	
t	2.281735	
P(t)	0.011279	
5%*t*	1.645233	

As shown in Table 7, significant differences were observed at a level of 5% between (A) and (C) in 2004, even in consideration of multiple comparisons with the significance level adjusted by Bonferroni adjustments. Due to the relationship denoted by (C)>(D)>(E), significant differences were also observed at a level of 5% between (A) and (D), as well as (A) and (E). In contrast with the *P* value calculated on the basis of all data including bankrupt companies (<.03535), the *P* value reflected a substantial change in the level of significance when the analysis was limited to going concern companies (<.01128). This means that the impact of the change in accounting standards is more prominent in going concern companies. Deferred tax asset with a high level of uncertainty were applied by 72% of all companies, led by NTT DoCoMo, Inc., which debited 540 billion yen.

V UNCERTAINTIES AGGRAVATED BY THE CHANGE IN ACCOUNTING STANDARDS

One of the new accounting procedures introduced as a result of the change in accounting standards and processed at the top management's discretion relates to deferred tax asset. The author has no objection to introducing such accounting standards, as the deferred taxes will eventually be adjusted, provided that the company's financial performance continues in line with the top management's forecast. However, the applying of deferred tax asset

may be regarded as a highly uncertain accounting procedure, as the top management's forecast will not necessarily be met. Moreover, as it is extremely difficult for a third interested parties to measure the uncertainty to which the company is exposed, they have no choice but to leave the task of determining the appropriateness of applying the deferred tax asset to the auditor. Taking this into account, it is doubtful that the introduction of tax effect accounting helps resolve the asymmetry of information—it could even be promoting the asymmetry of information instead.

From this perspective, an investigation was conducted on companies which not only recorded a net loss but also applied deferred tax asset in any fiscal year between fiscal 2000 and fiscal 2004. Table 8 shows the results.

TABLE 8: NUMBER OF FIRMS APPLYING DEFERRED TAX
- RECORDING NET LOSS-

Year	2004	2003	2002	2001	2000
Cases	152	342	629	504	360

The companies meeting the above criteria have been on the decrease since reaching a peak in 2002. However, it is worth noting that in 2004, more than 150 companies which recorded a net loss still applied deferred tax asset. Of course, a company which recorded a net loss in a certain fiscal year will not necessarily do so again in the following fiscal year. Nonetheless, uncertainties associated with the capitalization capability of deferred tax asset are deemed to be greater in loss-making companies than in companies which are clearly making profits steadily.

Thus the companies which applied deferred tax asset were observed, focusing on their net loss in the following fiscal year. The managers must have forecasted that the company would generate sufficient taxable income in the next fiscal year when debiting deferred tax asset and the forecasted amount must have been a rational estimate from the auditor's point of view as well.

The results, however, were as indicated in Table 9. Companies which applied deferred tax asset until 2003 were looked into, to find out whether they had recorded a net income or loss in the following year, and it was revealed that companies which had a net loss accounted for approximately 70% of all companies' in Table 8.

TABLE 9: NUMBER OF FIRMS APPLYING DEFERRED TAX
- RECORD NET LOSS THE YEAR NEXT-

Year	2004	2003	2002	2001	2000
Cases	---	236	446	660	504

It goes without saying that one cannot make an easy comparison between Tables 8 and 9, but the findings revealed that companies which recorded a net loss and debiting deferred tax asset at the same time frequently had problems in their accounting procedures.

Between the top management and the third interested parties of the company, there clearly exists an asymmetry of accounting information on the uncertainties surrounding the taxable income to be generated in the next fiscal year. Further analysis must carefully be conducted in regards to the possibility of information users being mislead by the accounting of deferred tax asset based on the top management's judgment (forecast).

VI CHANGE IN ACCOUNTING STANDARDS AND ELIMINATION OF CROSS-SHAREHOLDING

As this paper is aimed at revealing the impact of the change in accounting standards on financial analysis in Japan, the issue of whether the change in accounting standards has accelerated the elimination of cross-shareholding falls outside the scope of this paper. Nonetheless, the issue will be taken up here because there are claims that the valuation of securities at market value has helped eliminate cross-shareholding in Japan.

The impact of the change in accounting standards on cross-shareholding had been analyzed in depth by Suda, et al. [2004]. The data forming the basis of the study conducted by Suda, et al. [2004] was obtained from the "*Questionnaire Survey on the Impact of the Change in Accounting Standards on Business Management*", conducted jointly with the Japan Research Institute (JRI) in 2002.

The survey concluded that the change in accounting standards affected business management the most in the area of *cross-shareholding*[7]. However, in their analysis, *the percentage of the cross-held shares sold off* (a variable used in the analysis) was acquired only from responses to the questionnaire survey, and the sample data consisted of only 366 companies. Although it is not difficult to estimate the behavior of all listed companies based on the sample data of 366 companies, it is possible only if the sampled data meets the conditions required for explaining the behavior of all listed companies.

While cross-shareholding appears to be declining in financial institutions according to news reports and other sources[8], there are claims that "hidden" cross-shareholding is on the rise in business companies. Thus an attempt was made to analyze the cross-shareholding structure from a financial perspective. The results have to be estimated to a certain extent, as it is intrinsically difficult to accurately identify the cross-shareholding situation of individual companies. Here, the focus was on *net unrealized gain on other securities* recorded directly in the

[7] Compiled by Kazuyuki Suda [2003] p.189.
[8] At the fourth meeting of the Finance Subcommittee of the Tax Commission, Mr. Harada, the head of the Planning and Coordination Division of the Financial Services Agency stated that the elimination of cross-shareholding in financial institutions has been prominent in recent years.

owners' equity section by companies when they applied a valuation gain/loss based on the market value of the shares. Although it is impossible to conclude that 100% of *other securities* are cross-held shares, they are undoubtedly shares that the company has no immediate plans to sell off. As the *net unrealized gain on other securities* must be revalued every year, changes in the number of shares held can roughly be identified by observing the amount debited and by comparing it with the trends in the share price. The empirical analysis in Section IV was based on the sum of net unrealized gain on securities and land revaluation excess, so only the net unrealized gain on securities was extracted from the sample data for the years 2003 and 2004 and the average amount debited per company was calculated. Also, the analysis in Section IV assumed that the revaluation excess equals zero when a negative net valuation resulted from offsetting the valuation gain with a valuation loss, but here the valuation loss was recognized as is. Therefore, the data subject to analysis here naturally differs from the number of companies and the debited amount shown in Table 3. The results were as shown in Table 10. The data does not include financial institutions or insurance companies.

TABLE 10: SITUTATION OF *"GAIN ON OTHER SECURITIES"*

FY	2004	2003	Increasing
Total No. of Sample	2,017	2,452	-17.73%
Total No. of Applied Companies	1,965	2,382	-17.50%
Ratio of Applied Companies	97.4%	97.1%	0.31%
Total Amount (mill yen)	8,976,813	4,253,599	111.04%
Average Amount of Debited (thousand yen)	4,568,353	1,785,726	155.83%

A comparison of the number of companies which applied a *net unrealized gain on other securities* reveals that they decreased by as much as 17.5% between 2003 and 2004. However, this is attributable to the smaller sample size as a whole; the percentage of companies which applied a *net unrealized gain on other securities* hardly changed, accounting for more than 97% of all companies in the dataset in both years. However, the total amount applied by all listed companies and the amount debited per company increased. Especially noteworthy was the rate of increase of the amount debited per company, which increased 2.55 times between 2003 and 2004 (corresponding to a rate of increase of 155%).

Changes in the net *unrealized gain on securities* naturally reflect fluctuations in the market value of the shares held. However, if the amount of the revaluation excess changed by more than the extent to which the market value of the shares changed, it is natural to presume that there were changes in the number of shares held by the companies. With this in mind, the trends in share price were observed. As the closing date varies from company to company, the analysis is complicated if the market value of shares is to be identified as at the closing date of each company. Therefore, the share prices as at March 31--the most common closing date of the

companies in Japan—were observed and then compared with the revaluation excess of companies. The Nikkei Stock Average and TOPIX on March 31, 2003 and 2004 were as shown in Table 11.

TABLE 11: STOCK PRICE COMPARISON

Date	2004/3/31	2003/3/31	Increasing
NIKKEI Average (¥)	11,715.39	7,972.71	+46.94%
TOPIX (¥)	1,179.23	788.00	+49.65%

Stock prices based on the Nikkei Stock Average and TOPIX had increased by almost 50% from 2003 to 2004. In contrast, the amount of *net unrealized gain on other securities* debited per company increased by more than 155% between 2003 and 2004 (refer to Table 10). This suggests that a considerable number of companies increased their holding quantity of *other securities.* In other words, while it is impossible to conclude that *the change in accounting standards has encouraged cross-holding*, at least it confirmed that the holding number of *other securities* have increased in listed companies in recent years.

VII CONCLUSION

In this paper, an empirical analysis was conducted by applying SAF2002 model, in order to reveal the impact of the change in accounting standards on financial analysis. The analysis involved measuring the impact of the change in accounting standards, by analyzing the effects on an objective indicator, namely, a bankruptcy prediction model, SAF2002 model, using financial variables. The results confirmed that the impact of *other comprehensive income* is considerable, and that many companies are engaged in uncertain accounting practices especially in regards to *deferred tax asset*.

In financial analysis, it is necessary to pay heed to the comparability of financial figures. This paper validated that even if the accounting items are the same, the components of the accounting items have changed so much in recent years in Japan that the resulting disparities cannot be ignored. It is therefore necessary to carefully conduct future analyses while giving due consideration to trends in accounting standards as well, instead of conducting analyses in a uniform manner.

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