Hitotsubashi Journal of Commerce and Management 45 (2011), pp.1-20.

PRESENTATION OF RETIREMENT BENEFITS EXPENSE AND EARNINGS ATTRIBUTES: EVIDENCE FROM JAPAN

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Abstracts

This research examines how the amendment of retirement benefits accounting affects earnings attributes and corporate management of Japanese companies. The results show that the existing net income before taxes is more persistent, predictable, smoothed, and value relevant, while that the approach 1 income that recommended by the International Accounting Standards Boards (IASB) is more timely. I suppose that the earnings attributes of persistency, predictability, and smoothness are suitable for the Japanese corporate system. This research suggests that Japanese companies possibly shift the organization-oriented corporate system to the market-oriented corporate system, if the ASB of Japan (ASBJ) adopt the presentation of the approach 1 income that is recommended by the IASB (2008). So they may have severe impacts on their corporate system or employment system because they will make it difficult to maintain the long-term relationship between other stakeholders, which is the source of competitiveness.

I. *Introduction*

This paper examines how the amendment of the accounting standards for retirement benefits expense affects earnings attributes and the corporate management of Japanese companies. There are three background of this research, which is discussed below.

The first is that accounting standard setters across the world are actively discussing the convergence of retirement benefits accounting. After the declaration of the Norwalk Agreement in October, 2002 in particular, the International Accounting Standards Boards (IASB) and Financial Accounting Standards Board (FASB) have jointly developed a single and international set of high quality accounting standards. In Japan, too, such movement has been accelerated after the Tokyo Agreement in August, 2007. The IASB announced its "Preliminary Views on Amendments to IAS19 *Employee Benefits*" in March, 2008. It proposed accounting procedures which greatly change the current earnings view greatly (ASBJ; 2009). Thus, such a revision of accounting standards has a great impact on the behavior of Japanese companies. However, only a few studies have examined these effects.

The second is that prior research has shown that retirement benefits accounting has misled the stock market investor and contributed to the creation of a stock market bubble (Coronado and Sharpe; 2003). The accounting standard for retirement benefits requires to include far future

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events into current financial statements. Therefore, it can be easily utilized as a means for discretionary earnings management, for examples, managers change the actuarial assumptions. After the financial crisis in September 2009, discretionary earnings management has serious problems because it leads to the stock market bubbles. Then, we should discuss how accounting standard for retirement benefits accounting has the impacts to the investors, creditors and firms.

The third is that we can expect that the revision of retirement benefits accounting standards has larger impacts on the Japanese companies than others. Japanese companies have not shifted to retirement contribution plans as much as foreign companies have (For example, Kagaya; 2008). However, there are few studies that have examined the impact on Japanese companies by the amendment of accounting standards for retirement benefits. The purpose of this research is to examine this impact on Japanese companies.

II. *Related Standards and Prior Research*

1. The Revision of Accounting for a Retirement Benefits Plan

IASB announced the paper "Preliminary Views on Amendments to IAS19 *Employee Benefits*" in March, 2008. It should be noted that it proposes the revisions which are most likely to change current earnings view.

Table 1 gives an overview of the presentations of retirement benefits expense according to the Japanese standards, IAS, FAS, and the related drafts. According to this, it is important to recognize the service expense, interest expense and expected return on plan assets in profits or losses, meanwhile it is unnecessary to recognize actuarial gains or losses, prior service cost and transition obligations on the changes of accounting standards in the balance sheet or income statement when incurred in the Japanese standard and IAS19. We can defer these items and recognize them over the average remaining period of service. However, in FAS 158, it is necessary to recognize the service expense, interest expense and expected return on plan assets in profits or losses, which is the same as both the Japanese standard and IAS 19, while actuarial gains or losses and prior service cost are recognized in other comprehensive income when incurred and are reclassified into net income when recognized. Moreover, in IAS 19, it is permitted to adopt other accounting procedures, which are the same as those standards described above, with regards to service expense, interest expense, and expected return on plan assets in profits or losses. But actuarial gains and losses are recognized in other comprehensive income without being reclassified when incurred, whereas prior service cost is recognized as deferred (IAS19, 93 (d)). In contrast to existing accounting standards, the discussion paper "Preliminary Views on Amendments to IAS19 *Employee Benefits*" published in March, 2008 includes three accounting procedures for retirement benefit, which possibly brings about the reforms in existing earnings concepts[1].

It is necessary to recognize all the changes in the retirement benefit obligations and the value of plan assets in profit or loss when incurred, which include actuarial gains or losses and all prior service costs under approach 1. On the other hand, under the approach 2, it is

[1] IASB published the exposure draft of IAS19 Employee Benefits in April 2010. I don't analyze this draft in this study. This draft proposes the presentation way which combines the approach 1 with the approach 2.

TABLE 1. PRESENTATION OF RETIREMENT BENEFITS EXPENSE IN JAPANESE STANDARDS, IAS AND FAS

	Presentation Method						Presentation of IAS19.93D
	①	②	③	④	⑤	⑥	
	Japan・IAS19	FAS158	IAS19 (93D)	Approach 1	Approach 2	Approach 3	
Service Expense	P/L	P/L	P/L	P/L	P/L	P/L	Operating Profits and Losses
Interest Expense	P/L	P/L	P/L	P/L	OCI	P/L	Financial Profits and Losses
Expected Return on Plan Assets	P/L	P/L	P/L	—	—	P/L	Financial Profits and Losses
Actuarial Gains or Losses							
Changes in Fair Value of Plan Assets	Deferred	*Deferred*	OCI	P/L	OCI	OCI	OCI
Changes in Discount Rates	Deferred	*Deferred*	OCI	P/L	OCI	OCI	OCI
Other	Deferred	*Deferred*	OCI	P/L	P/L	P/L	OCI
Prior Service Cost	Deferred	*Deferred*	Deferred	P/L	P/L	P/L	Operating Profits and Losses

Note: "Deferred" indicates that figures are unrecognized in both BS and PL and amortized in a fixed period, "*Deferred*" means that figures are included in OCI and reflected in the calculation of the net income after reclassifying when recognized; P/L indicates that figures are reflected in profit or loss when occurred. OCI indicates that figures are reflected in the comprehensive calculation of profits and losses without reclassification.

important to recognize service costs and changes in service costs stemmed from changes in assumptions other than the discount rates (including prior service cost and actuarial gains or losses caused by effects other than changes in discount rates -hereafter other actuarial gains or losses) in a profit or loss, and recognize actuarial gains or losses caused by changes in the value of plan assets and discount rates in other comprehensive income (without reclassification). Under approach 3, it is necessary to recognize the service cost, interest cost, expected return on plan assets, amortization of prior service cost and actuarial gains or loss in profit or loss, and to recognize actuarial gains or losses due to changes in the value of plan assets and discount rates in other comprehensive incomes (without reclassification).

IASB explains that the approach 1 is consistent with the conceptual framework and other International Financial Reporting Standards (IFRSs) (IASB; 2008). Three approaches are common in the point that unrecognized items are to be recognized on the balance sheet and the changes in the amount of retirement benefits obligations and plan assets are to be recognized in the net income or other comprehensive income. Thus, what comments do their respondents send to IASB on the three approaches? According to IASB, the support for the approach 1 accounted for 12%, that for the approach 2 was 5%, and that for the approach 3 was 18%. The opinion of not supporting the immediate balance sheet recognition accounted for 12%, that of including other comprehensive income or net income was 26%, that of supporting the same accounting procedures as FAS 158 was 8%, and the other opinions accounted for 7%. This suggests that there are many who are against recognizing actuarial gains or losses in profit or loss, while for the balance sheet recognition.

2. How Do Stock Markets Evaluate Retirement Benefits Expenses?

Pioneering study in this field has been carried out by Barth, Beaver and Landsman (1992). The research finds the evidence that investors individually evaluate each component of the retirement benefits expenses such as a service expense, an interests expense, and an amortization of unrecognized net gain or loss separately in U.S. firms. Picconi (2006) finds that although parameters such as the expected rate of return on plan assets set for calculating a retirement benefits expense are disclosed at the beginning of fiscal terms, discrepancies between the expected and the actual are not immediately reflected in the analysts' expectations and stock markets' evaluations at the time of disclosure.

Davis-Friday, Miller and Mittelstaedt (2005) focuses on 200 companies with large projected benefits obligation (PBO), weighed fair values and smoothed fair values, and revealed that smoothed fair values have an effect that decreases the earnings per share (EPS), and the stock markets "saw through" this effect itself. Moreover, Hann, Heflin and Subramanayam (2007) examined the comparison of value and credit relevance between the fair value model and the smoothing model. This research found that the fair value model cannot lower the value relevance of income statements. On the other hand, contrary to their expectations, this research found the fair value model couldn't always increase the value relevance of balance sheet.

As is described above, these prior researches suggest that the unrecognized items on the retirement benefits accounting cannot be easily understood, and it is unlikely to be understood as easily as other income information by the investor, or it is not too much to say that the original attributes of the items are clarified. The purpose of this research is to clarify these points.

III. *The Characteristics and Discussion Points of Retirement Benefits Accounting*

1. Three Characteristics of Retirement Benefits Accounting

In order to understand the attributes of retirement benefits accounting and stock market evaluations, it would be necessary to understand their accounting characteristics. The author considers that retirement benefits accounting has three characteristics which are different from other accounting systems.

The first is that retirement benefits accounting covers far future events in the long term. Retirement benefit is a payroll that is provided to employees after retirement on the basis of reasons, such as they have offered services for a certain period of time, etc. Given a long term employment system such as that in Japanese companies, it is expected to take a long time for the employees to be paid the pension from the point of acquiring pension rights. Because the events that occur over a long period must be recognized in financial statements, an economic volatility in the far future need to be predicted in advance and reflected in accounting procedures. Put differently, such accounting systems make adjustments when such predictions or estimations turn out to be wrong.

The second is that there is a possibility that retirement benefits liability is presenting a new category called "employee's equity". (Ito, Tokuga and Nakano; 2004). On the credit side of the

balance sheet, two stakeholders' equities; shareholder's and creditor's equity; have been reported so far. Although retirement benefits liability includes aspects as "creditor's equity," it is possible to position retirement benefits accounting as accounting procedures in order for recognizing "employee's equity" anew on the balance sheets that have not been fully recognized. This is particularly important for many Japanese companies that consider long-term employment to be a premise, compared to foreign companies.

The third is that retirement benefits accounting indicates the hybrid accounting structure of a revenue and expense view and an asset and liability view (For example, Tokuga; 2001). According to the projected unit method that is used for calculating PBO, the present value of retirement benefits, which are obtained on the basis of employees' prior service, is calculated as the retirement benefits liability for the employees and the changes in value of it are calculated as a retirement benefits expense. Accounting procedures like this have high affinity with the asset and liability view. On the other hand, the amortization of unrecognized liabilities has high affinity with the revenue and expense view, which is symbolized by cost allocation. It would be a characteristic of retirement benefits accounting for two accounting views to be mixed in one accounting system.

2. The Relation between Accounting Views and Presentation of Retirement Benefits Expenses

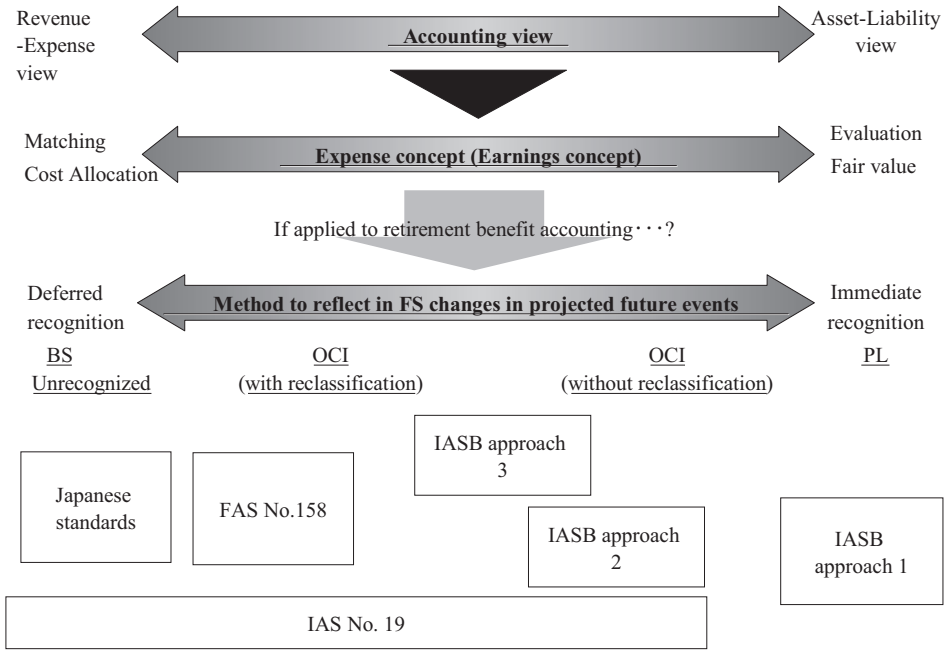
First, I examine the relation between the accounting views and retirement benefits accounting in the current Japanese standards, IFRS (or IAS) and FAS. The major differences among these standards are the processing of the components of the retirement benefits expense. In particular, it appears unclear whether it is necessary to recognize the actuarial gains or losses or prior service cost when incurred or to admit the deferred recognition.

As described earlier, retirement benefits accounting involves the accounting procedures in which two views are hybrid; one emphasizes "the revenue and expense view," which is symbolized by cost allocation and the principle of matching expenses with revenues, and the other emphasizes "the asset and liability view" which is symbolized by the concepts such as evaluation and fair value. Therefore, how an accounting standards setter should adopt the accounting procedures of actuarial gains or losses and prior service cost depends on the accounting views of the accounting standards setter.

Figure 1 gives an overview of the differences between these accounting standards or preliminary views. The idea that insists on the immediate recognition of actuarial gains or losses and prior service cost, as proposed by approach 1, is consistent with the asset and liability view because its approach is required to recognize all changes in the retirement benefits liability and the value of plan assets. In contrast to this, the Japanese standard and one of IAS 19 admit to defer actuarial gains or losses and prior service cost when incurred and amortize them over a long term, such as the expected average remaining workings lives of the employees. Its accounting procedures are consistent with the revenue and expense view because it emphasizes the cost allocation and the principle of matching expenses with revenues.

According to the above, it can be summarized that we can deter the actuarial gains or losses and prior service cost in the financial statements under the Japanese standard and a part of IAS19, which is, especially consistent with the revenue and expense view, while under the approach 1 in IASB (2008), corporations are required to recognize their items not only in the

FIG. 1. THE RELATION BETWEEN THE ACCOUNTING VIEW AND POST-RETIRED BENEFITS ACCOUNTING STANDARDS



balance sheet but also in income statement, which is consistent with the asset and liability view. In Japan, after the Tokyo Agreement in August 2007, the Business Accounting Council in FSA (Financial Services Agency) and the Accounting Standards Board of Japan (ASBJ), which participate in accounting standards setting, further accelerated the development of uniform and high quality accounting standards on a global scale. If the Japanese accounting standard setters adopt the approach 1 that is recommended by IASB (2008), how are the earnings attributes of Japanese companies going to change? The purpose of this research is to examine how the earnings attributes of Japanese companies change if the Japanese accounting standards setter adopts the accounting standards proposed by the IASB (2008) and to obtain suggestions for setting a future accounting standards in Japan.

IV. *The Reform of Retirement Benefits Accounting and Earnings Attributes*

1. Sample Selection

For this research, it is used 810 samples which satisfy the below described requirements.

1. It is listed on the first section of the Tokyo Stock Exchange.
2. Its fiscal year ends in March.
3. The retirement benefits accounting data can be obtained from the fiscal year March,

TABLE 2. DATA SAMPLE

Industry	Number of Companies	Industry	Number of Companies	Industry	Number of Companies
Fishery, Agriculture, Forestry	2	Iron & Steel	22	Marine transportation	1
Mining	1	Nonferrous Metals	19	Air transportation	2
Construction	69	Metal Products	19	Warehousing and harbor transportation services	11
Food	36	Machinery	74	Information & Communication	30
Textiles & Apparels	22	Electric Appliances	108	Wholesale trade	62
Pulp & Paper	6	Transportation equipment	52	Retail trade	19
Chemicals	89	Precision Instruments	15	Securities and Commodity Futures	2
Pharmaceutical	22	Other Products	27	Other Financing Business	11
Oil and Coal Products	4	Electric Power & Gas	10	Real Estate	9
Rubber Products	7	Land Transportation	24	Services	19
Glass & Ceramics Products	16				

2001 to March, 2008 successively.

4. The stock price data can be obtained from the fiscal years of March, 2001 to March, 2008 successively.

5. It is not a financial company (non-bank, non-securities firm, non insurance firm).

The NEEDS Financial-Quest Database was used for extracting the data. Table 2 shows the data sample, which is categorized by the industry (based on the exchange industry code).

2. The Research Design

Recently, accounting researchers have shown an interest in earnings attributes. For example, Francis, LaFond, Olsson, and Schipper (2004) examine the following seven earnings attributes -accruals quality, earnings persistence, earnings predictability, smoothness, value relevance, timeliness and conservatism; and indicated that their attributes has the relevance with the cost of capital. Similarly, Barth, Konchitchki, and Landsman (2008) develope the measure called earnings transparency from the perspective of how much earnings information can be used to explain stock returns, and on the basis of this, they investigated how much the degree of the difference was related to cost of capital. I focus on the earnings attributes taken by Francis, LaFond, Olsson, and Schipper (2004) , with the exception of accruals quality. The reason for excluding it is because it is difficult to assume the way retirement benefits accounting makes impacts accruals quality since it is smoothed in the long term which retirement benefits accounting adopts.

Each measure is showed below[2].

Persistence: φ_1 in equation (1)
Predictability: standard deviation of residual error calculated by the equation (1).

$$X_{j,t} = \phi_0 + \varphi_1 X_{j,t-1} + v_{j,t} \quad \text{.....(1)}$$

$X_{j,t}$ indicates firm-j's earnings per share in year t, and $v_{j,t}$ indicates firm-j's residual error in year t.

There are only seven samples in each company from the fiscal years of March, 2002 to March 2008. Therefore, it is difficult to calculate earnings persistence for each company. In this research, therefore, equation (1) was linear regressed upon dummy year variables that were incorporated for each industry, and ϕ_1 was calculated for each industry. In addition, I examine the differences in earnings persistence among the each income by using the Student's t-test or Wilcoxon rank sum test. With regard to earnings predictability, on the basis of the model in which equation (1) was incorporated with dummy year variables, the residual error was calculated for each company, and the standard deviation of this residual error from the fiscal years of March 2002 to March 2008 was derived. Then, I examined the differences by using the Student's t-test and Wilcoxon rank sum test.

Smoothness: the ratio of income variability to cash flow variability as given below in equation (2).

$$Smoothness_j = \frac{\sigma\,(NIBT_j)}{\sigma\,(CFO_j)} \quad \text{....(2)}$$

NIBT stands for net income before taxes, and CFO stands for cash flow from operation. (Both control the heteroskedasticity by being divided by the total assets in the beginning of the fiscal year.) Namely, it can be considered to be a measure that indicates how stable earnings are against cash flow volatility. I calculate the measure for each company from the fiscal years of March 2001 to March 2008, and, then, I examine the differences among earnings by using the Student's t-test or Wilcoxon rank sum test.

Value relevance: standard deviation of absolute values of residual errors derived from equation (3), including the dummy variables (year, industry).

$$RET_{j,t} = \delta_0 + \delta_1 EARN_{j,t} + \delta_2 \Delta EARN_{j,t} + \xi_{j,t} \quad \text{.....(3)}$$

$RET_{j,t}$ implies firm-j's stock return from the beginning of the fiscal year t to three months after the end of the fiscal year t, $EARN_{j,t}$ implies firm-j's earnings in the fiscal year t, and $\Delta EARN_{j,t}$ implies the changes in firm-j's earnings in fiscal year t ($EARN_{j,t}$ and $\Delta EARN_{j,t}$ control heteroskedasticity by dividing the market capitalization at the beginning of fiscal year t).

Timeliness: the standard deviation of the residual errors derived from equation (4)

[2] Francis, LaFond, Olsson, and Schipper (2004) explain the definition of each measure in details.

Conservatism: $\frac{(\beta_1+\beta_2)}{\beta_1}$, derived from equation (4)

$$EARN_{j,t}=\alpha_{0,j}+\alpha_{1,j}\,NEG_{j,t}+\beta_1\,RET_{j,t}+\beta_2\,NEG_{j,t}\cdot RET_{j,t}+\varsigma_{j,t} \quad \text{.....(4)}$$

In this research, I examine a measure of the comparison between four earnings given below;

(a) net income before taxes (termed NIBT),
(b) net income based on the approach 1 (upon adding the amount of writing off actuarial gains or losses and prior service cost into (a), changes in value of the retirement benefits liabilities and plan assets is directly recognized in the net income; termed approach 1 income),
(c) net income based on the approach 2 (upon excluding interest expense and expected return on plan assets from (a), the amount writing off prior service cost is added and changes in value of prior service cost is recognized in the net income; hereinafter called approach 2 income),
(d) net income based on the approach 3 (the amount writing off prior service cost is added and changes in the value of prior service cost is recognized in the net income; hereinafter called approach 3 income).

3. The Results

1) Earnings persistence

Table 3 shows the results of a comparison of earnings persistence for each income, using the Student's t-test and Wilcoxon rank sum test, estimating the slope of the coefficient derived from equation (1). These results show that the slope of the coefficient of net income before taxes is statistically significantly higher than the approach 1 income by the Student't t-test and Wilcoxon rank sum test.

Thus, the net income before taxes is statistically significantly more persistent than the approach 1 income. In addition, net income before taxes is statistically significantly more persistent than the approach 2 or 3 incomes by the Wilcoxon rank sum test. Similarly, the approach 3 income is statistically significantly more persistent than the approach 1 income by the Student's t-test and Wilcoxon rank sum test and than the approach 2 income by the Wilcoxon rank sum test.

Based on above, as far as earnings persistence is concerned, the net income before taxes is the highest level, the approach 3 income follows, and the approach 1 income and the approach 2 income are at a lower level than the approach 3 income, however it was demonstrated that reaching a clear conclusion of which level is higher was not possible.

2) Earnings predictability

Table 4 shows the results of the comparison of earnings predictability for each income by using the Student's t-test and Wilcoxon rank sum test, estimating the absolute value of residual errors derived from equation (1). This result shows that the absolute value of residual errors on net income before taxes is statistically significantly lower than other income by the Student's t-

TABLE 3. EARNINGS PERSISTENCE

	Mean	Student's t-test		Median	Wilcoxon signed-rank test	
		t-value	p-value		z-value	p-value
Net Income before Taxes Approach 1	0.787 0.748	2.633	0.014	0.912 0.829	3.187	0.001
Net Income before Taxes Approach 2	0.787 0.730	1.704	0.101	0.912 0.842	2.984	0.003
Net Income before Taxes Approach 3	0.787 0.782	1.457	0.158	0.912 0.893	1.841	0.066
Approach1 Approach 2	0.748 0.730	0.620	0.541	0.829 0.842	1.460	0.144
Approach1 Approach 3	0.748 0.782	-2.444	0.022	0.829 0.893	-3.060	0.002
Approach 2 Approach 3	0.730 0.782	-1.595	0.123	0.829 0.893	-3.340	0.001

TABLE 4. EARNINGS PREDICTABILITY

	Mean	Student's t-test		Median	Wilcoxon signed-rank test	
		t-value	p-value		z-value	p-value
Net Income before Taxes Approach 1	340.753 410.995	−3.581	0.000	49.568 57.984	−9.913	0.000
Net Income before Taxes Approach 2	340.753 362.890	−2.815	0.005	49.568 50.242	−2.435	0.015
Net Income before Taxes Approach 3	340.753 362.660	−2.740	0.006	49.568 49.985	−1.541	0.123
Approach1 Approach 2	410.995 362.890	3.384	0.001	57.984 50.242	8.695	0.000
Approach1 Approach 3	410.995 362.660	3.426	0.001	57.984 49.985	9.502	0.000
Approach 2 Approach 3	362.890 362.660	0.469	0.639	50.242 49.985	0.649	0.516

test and Wilcoxon rank sum test.

Hence, net income before taxes is statistically significantly more predictable than other income. In addition, the approach 1 income is statistically significantly less predictable than the approach 2 or 3 incomes by the Student's t-test and Wilcoxon rank sum test.

On the basis of the above, as far as earnings predictability is concerned, it is demonstrated that the net income before taxes was the highest level, the approach 2 income and the approach 3 income are the next highest level, and the approach 1 income is at the lowest level.

3) Smoothness

Table 5 shows the results of the comparison of earnings smoothness for each income by using the Student's t-test and Wilcoxon rank sum test, estimating the ratio of earnings before taxes variability to cash flow variability derived from equation (2). This result shows that the ratio of the net income before taxes variability to cash flow variability and the approach 3 income variability to cash flow variability are statistically significantly lower than the approach

TABLE 5. EARNINGS SMOOTHNESS

	Mean	Student's t-test		Median	Wilcoxon signed-rank test	
		t-value	p-value		z-value	p-value
Net Income before Taxes Approach 1	0.695 0.939	−17.860	0.000	0.661 0.852	−20.755	0.000
Net Income before Taxes Approach 2	0.695 0.716	−7.037	0.000	0.661 0.682	−9.909	0.000
Net Income before Taxes Approach 3	0.695 0.698	−0.955	0.340	0.661 0.665	−0.101	0.920
Approach1 Approach 2	0.939 0.716	18.104	0.000	0.852 0.682	20.777	0.000
Approach1 Approach 3	0.939 0.698	18.655	0.000	0.852 0.665	21.082	0.000
Approach 2 Approach 3	0.716 0.698	12.545	0.000	0.682 0.665	14.690	0.000

TABLE 6. VALUE RELEVANCE

	Mean	Student's t-test		Median	Wilcoxon signed-rank test	
		t-value	p-value		z-value	p-value
Net Income before Taxes Approach 1	0.087 0.105	−17.473	0.000	0.0428 0.0541	−25.761	0.000
Net Income before Taxes Approach 2	0.087 0.092	−11.150	0.000	0.0428 0.0465	−15.803	0.000
Net Income before Taxes Approach 3	0.087 0.089	−5.914	0.000	0.0428 0.0434	−2.005	0.045
Approach1 Approach 2	0.105 0.092	11.895	0.000	0.0541 0.0465	18.055	0.000
Approach1 Approach 3	0.105 0.089	14.520	0.000	0.0541 0.0434	22.990	0.000
Approach 2 Approach 3	0.092 0.089	10.832	0.000	0.0465 0.0434	15.156	0.000

1 or approach 2 incomes by the Student's t-test and Wilcoxon rank sum test.

So, net income before taxes and the approach 3 income are statistically significantly more smoothed than the approach 1 or 2 incomes. On the other hand, the approach 3 income are slightly lower than the level of smoothness of the net income before taxes, but statistically insignificantly. In addition, the approach 2 income is statistically significantly more smoothed than approach 1.

On the basis of the above, as far as smoothness is concerned, it is demonstrated that the net income before taxes and the approach 3 income are at the highest level, the approach 2 income follows, and the approach 1 income is at the lowest level.

4) Value relevance

Table 6 shows the results of the comparison of value relevance for each income by using the Student's t-test and Wilcoxon rank sum test, estimating the standard deviation of residual errors derived from equation (3). This result shows that the standard deviation of residual errors

TABLE 7. TIMELINESS

	Mean	Student's t-test		Median	Wilcoxon signed-rank test	
		t-value	p-value		z-value	p-value
Net Income before Taxes Approach 1	0.28830 0.28795	2.645	0.008	0.20477 0.20367	4.118	0.000
Net Income before Taxes Approach 2	0.28830 0.28862	−1.968	0.049	0.20477 0.20468	−9.655	0.000
Net Income before Taxes Approach 3	0.28830 0.28834	−0.912	0.362	0.20477 0.20460	−3.053	0.002
Approach1 Approach 2	0.28795 0.28862	−3.630	0.000	0.20367 0.20468	−10.290	0.000
Approach1 Approach 3	0.28795 0.28834	−3.168	0.002	0.20367 0.20460	−5.072	0.000
Approach 2 Approach 3	0.28862 0.28834	2.262	0.024	0.20468 0.20460	11.508	0.000

on net income before taxes is statistically significantly lower than all other incomes by the Student't t-test and Wilcoxon rank sum test. Hence, net income before taxes is statistically significantly more value relevant than all other income.

Next, the approach 3 income more value relevant than the approach 1 or approach 2 income. In addition, the approach 2 income is more value relevant than the approach 1 income. On the basis of the above, as far as value relevance is concerned, it is demonstrated that the net income before taxes is the highest followed by the approach 3 income, the approach 2 income and the approach 1 income.

5) Timeliness

Table 7 shows the results of the comparison of timeliness for each income by using the Student's t-test and Wilcoxon rank sum test, estimating the standard deviation of residual errors derived from equation (4). This result shows that the standard deviation of residual errors on the approach 1 income is statistically significantly lower than all other incomes by the Student's t-test and Wilcoxon rank sum test[3]. Hence, the approach 1 income is statistically significantly timely higher than all other incomes.

Next, the net income before taxes is higher than the approach 2 or 3 income. In addition, the approach 3 income is more value relevant than the approach 2 income. On the basis of the above, as far as value relevance is concerned, it is demonstrated that the approach 1 income is the highest followed by the net income before taxes, the approach 3, and 2 income.

6) Conservatism

Table 8 shows the results of the comparison of conservatism for each income by using the Student's t-test and Wilcoxon rank sum test, estimating $\frac{(\beta_1+\beta_2)}{\beta_1}$ derived from equation (4).

As seen in table 8, because the data found is not stable, it is difficult to derive a

[3] Francis, LaFond, Olsson and Schipper (2004) examines the timeliness by using the coefficient of determination derived from equation (4). I get the same results, if I apply the Francis et al (2004).

TABLE 8. CONSERVATISM

	Mean	Student's t-test		Median	Wilcoxon signed-rank test	
		t-value	p-value		z-value	p-value
Net Income before Taxes Approach 1	−51.365 11.602	−1.106	0.279	−51.365 11.602	−0.165	0.869
Net Income before Taxes Approach 2	−51.365 23.147	−1.279	0.213	−51.365 23.147	−2.857	0.004
Net Income before Taxes Approach 3	−51.365 8.598	−1.029	0.313	−51.365 8.598	−2.045	0.041
Approach1 Approach 2	11.602 23.147	−0.571	0.573	11.602 23.147	1.079	0.280
Approach1 Approach 3	11.602 8.598	0.362	0.720	11.602 8.598	1.206	0.228
Approach 2 Approach 3	23.147 8.598	0.909	0.372	23.147 8.598	1.994	0.046

meaningful result for conservatism. However, if equation (4) is examined upon dummy industry variables and dummy year variables are added into all the samples but not for each industry, it is demonstrated that the degree of conservatism of the approach 1 income is the smallest, followed by the net income before taxes and the approach 3 income, and the approach 2 income is the biggest.

7) Results

The earnings attributes discussed above can be categorized into three major types. The first is based on accounting measures such as earnings persistence, earnings predictability and smoothness, and its purpose is to measure how the economic realities of companies can be mapped. The measures can be reflected the permanent income. Needless to say, the higher the earnings persistence, earnings predictability, and smoothness, the more stable the mappings of these events, and if it is otherwise, the more volatile the mappings of these economic events. The second type is to examine how income information is linked to stock prices and stock returns. This measure describes value relevance. If the levels and changes in earnings are closely linked to stock returns, then value relevance is considered to be high and desirable. The last type, timeliness and conservatism, is the measure that indicates how quick corporations recognize what happens in them on the financial statements. From the investors' perspective, the events of companies and especially the negative ones would better be recognized as soon as possible, thus the higher the timeliness and conservatism, the more desirable the information for the investors.

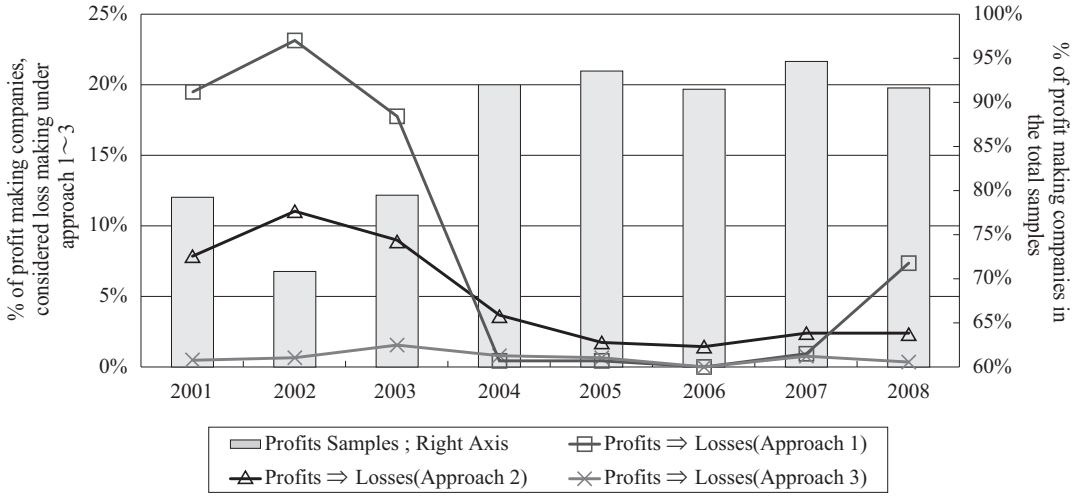
How can we organize the results of this research?

Table 9 shows the results of the earnings attributes of each income. According to this table, it was found out that net income before taxes is more persistent, predictable, smooth, and value relevant than other incomes, while the approach 1 income is timelier than other incomes.The results of the above examination, indicate that the net income before taxes maps economic volatility moderately and stably and the approach 1 income reflects it more promptly and significantly. There is the possibility that accounting procedures that have to be prioritized vary, depending on what information is needed by users, such as investors.

TABLE 9. PRESENTATION OF RETIREMENT BENEFITS EXPENSE AND EARNINGS ATTRIBUTES

	Net Income before Taxes	Approach 1 Income	Approach 2 Income	Approach 3 Income
Persistence	1	3	3	2
Predictability	1	3	2	2
Smoothness	1	4	3	2
Value Relevance	1	4	3	2
Timeliness	2	1	4	3
Conservatism	※ In the analysis of all the samples, the degree of conservatism is the smallest in Approach 1 and the biggest in Approach 2 and similar degree in Net income and Approach 3.		?	

FIG. 2. THE RATIO OF PROFIT-MAKING COMPANIES AND THE CONVERSION RATIO FROM PROFITS TO LOSSES

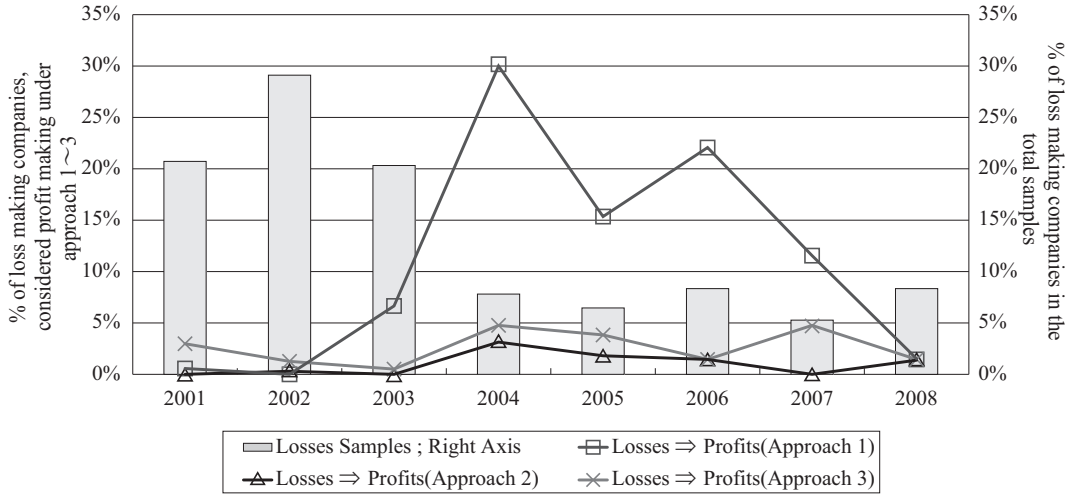


In addition, I examine the time trend of the net income before taxes, the approach 1, 2 and 3 income respectively. Through these result, we understand how each incomes change, depending on the economic conditions.

Figure 2 shows how many companies turn into losses from profits, responding to the ratio of the profit-making companies in the total samples, if the accounting standard is shifted from the existing accounting standard to the standard that IASB (2008) recommended (the approach 1, 2, or 3 income) in a specific year. According to this, if the accounting standard is shifted to the approach 1 income, it is demonstrated that the more companies turn into losses from profits at the time when the ratio of profits is lower. On the other hand, from the fiscal year of March 2004 to March 2007, when the ratio of profits is high, there are fewer companies that turn into losses from profits.

In Figure 3, on the contrary to Figure 2 it shows the ratio of companies that turned into

FIG. 3. THE RATIO OF LOSS-MAKING COMPANIES AND THE CONVERSION RATIO FROM LOSSES TO PROFITS



profits from losses, responding to the ratio of loss-making companies, if the accounting standard was changed in a specific year. Based on the approach 1 income, it is demonstrated that the more companies turn into profits from losses when the ratio of losses is lower.

The analysis above indicates that, if based on the approach 1 income, it is more likely that economic volatility is augmented when mapped, like the ratio of profits is augmented at the time of economic booms, and the ratio of losses is augmented at the time of economic busts. Namely the approach 1 income has the procyclicality.

V. *The Effects of a Choice of Accounting Systems on Corporate Systems*

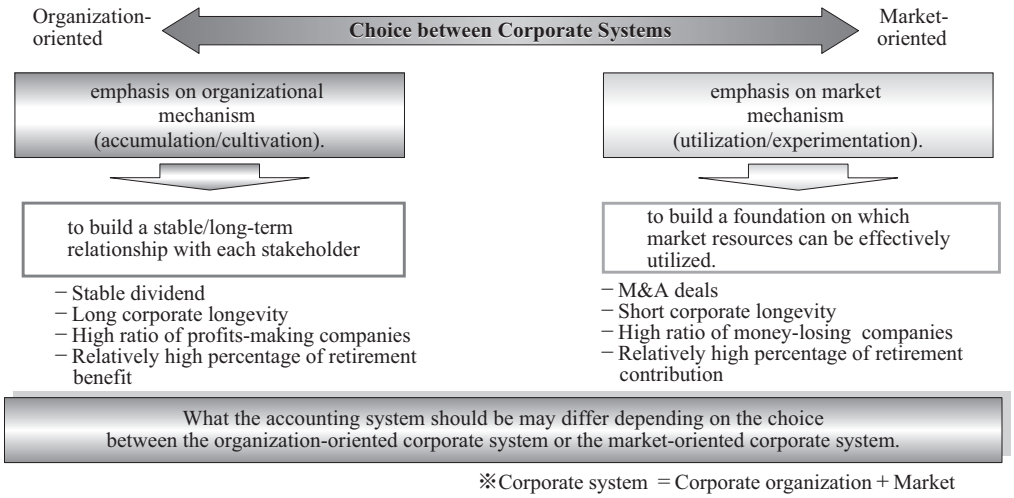
1. The Characteristics of Corporate System in Japanese Companies

As pointed out by Fujii (2007), it is likely that accounting systems possess institutional complementarities with certain kinds of adjacent economic and social systems (i.e., economic systems, corporate systems and legal systems). If an accounting system is changed, it is likely that Japanese corporate systems will be greatly affected.

First, what kinds of characteristics do corporate systems have? Based on the corporate system by Itami (2008) here, I discuss the effects after describing the characteristics of Japanese corporate systems.

As Itami (2008) explaines, there are two mechanisms which operate in the corporate systems, and corporate systems in any country consist of a combination of these two elements. One is organization mechanism and the other is market mechanism. Itami (2008) defines organization mechanism as “allocating resources and cooperating among them all through the coordination by the organizational hierarchy”, and defined market mechanism as “the pattern of

FIG. 4. ORGANIZATION-ORIENTED VS. MARKET-ORIENTED CORPORATE SYSTEM



transaction where individual economic units consider only their self interest and decide which party to transact with and how much to transact at what price freely without command from some other party". On the basis of these definitions it is pointed out an organization-oriented corporate system is a corporate system that relatively emphasizes an organization mechanism, and a market-oriented corporate system is a corporate system which relatively emphasizes market mechanism. Furthermore, organization-oriented corporate system is good at learning and accumulation, while market-oriented corporate system is good at utilization and experimentation.

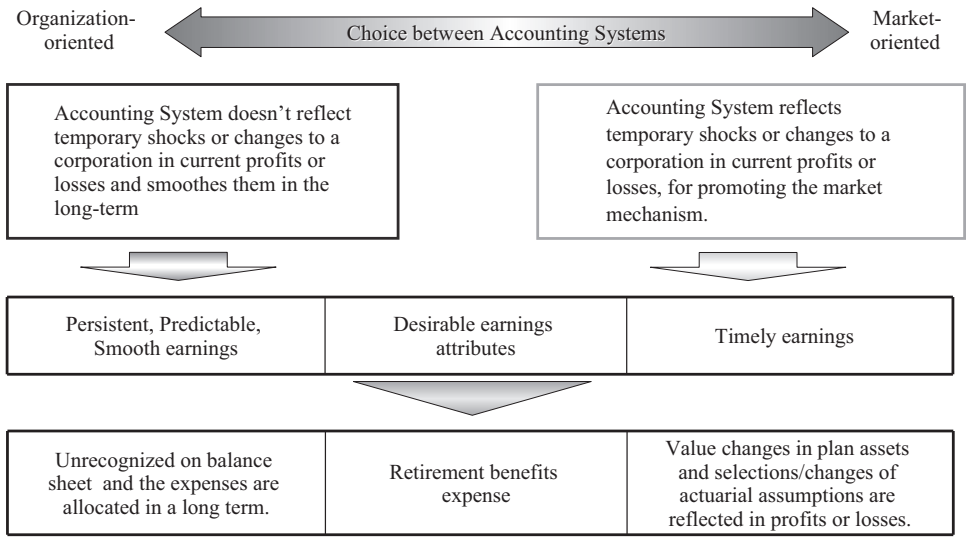
Itami (2008) summarizes that Japanese companies are close to the organization-oriented corporate system while U.S. companies are close to the market-oriented corporate system. Thus, in what aspects do the characteristics of organization-oriented corporate system and market-oriented corporate system appear? My inference is that an organization-oriented corporate system emphasizes "development of a stable and long term relationship with each stakeholders", while the market-oriented corporate system emphasizes "development of infrastructure which can utilize resources in markets efficiently".

In order to maintain stable and long term relationship with stakeholders, it is necessary to keep achieving profits because it is difficult to develop a long term relationship with loss-making companies. If efficient utilization of resources in markets is to be emphasized, corporations tend to make losses because they are running a business which deserves the risk. If they can create a new value by taking risks, they can create an overwhelmingly high profits and values.

2. Organization-oriented Accounting System vs. Market-oriented Accounting System

As Aoki (2001) points out, there are complementarities between various systems regarding companies and economies. If a Japanese corporate system is the organization-oriented, then it is

FIG. 5. ORGANIZATION-ORIENTED VS. MARKET-ORIENTED ACCOUNTING SYSTEM



likely that its accounting system is also organization-oriented. On the other hand, if a U.S. corporate system is market-oriented, then it is likely that its accounting system is also organization-oriented. Hence, in what kinds of circumstances does the difference between organization-oriented accounting system and market-oriented accounting system occur? If an accounting system is positioned to play the important role of linking companies with stakeholders, the differences make a great impact on the corporation.

If an organization-oriented corporate system tends to develop a stable and long term relationship with each stakeholders, then organization-oriented corporate system will be oriented not to reflect business organizations' temporal shocks and volatility in its financial statements in particular. Accounting systems serve as a base for deciding the dividend amount, financing contracts, compensation, etc. Because it is difficult to develop the stable and long-term relationship, if accounting information is very responsive to market volatility and temporal shocks.

On the other hand, if a market-oriented corporate system tends to develop the infrastructure, utilizing resources in capital markets efficiently, then the market-oriented accounting system will be oriented to promote the market transactions by recognizing the organizations' temporal shocks and volatility in financial statements. In order to utilize market resources efficiently, accounting systems are required to show organizations' stock situations at the end of the fiscal terms much sensitively in order to buy or sell such companies smoothly.

Particularly, with reference to the reform of retirement benefits accounting regarding actuarial gains or losses and prior service cost that this research covers, the difference between an organization-oriented accounting system and a market-oriented accounting system appears obviously. As described earlier, retirement benefits accounting is greatly affected by far future events. Therefore, unrecognized items under the existing accounting standard, such as "actuarial gains or losses," are highly likely to change in amounts owing to the volatility of stock markets

and changes in the financing markets in the future, even if retirement benefits liability or plan asset are augmented owing to the volatility of the current values of actuarial gains or losses. Therefore, the Japanese standard and IAS 19 call for an accounting standard that can defer the unrecognized items and write them off in financial statements over the average remaining period of service.

However, FAS 158 in September 2009 calls for reclassifying procedures which recognize actuarial gains or losses in other comprehensive incomes when they are recognized. Furthermore, in the discussion paper announced by IASB in March 2008, the approach 1 income is recommended as the primary procedures that recognize all changes in actuarial gains or losses in the balance sheet and income statement when incurred.

When are compared, the former can be positioned close to an organization-oriented accounting system and the latter can be positioned close to a market-oriented accounting system.

Japanese companies tend to adopt the organization-oriented corporate system, so they emphasize the stable and long term relationship with stakeholders. The existing accounting system characterizes the smoothness as complementary, with such a corporate system, because it is a relatively small accounting volatility compared with the economic volatility. Such an accounting system supports the fact that the proportion of profit-making companies is high, and they have long-term lifespan (s).

3. The Effects of Revising the Retirement Benefits Accounting System on Japanese Corporate Systems

What should be considered is that the adoption or convergence on retirement benefits accounting standards may affect not only the revision of accounting systems but also reforms in the corporate system.

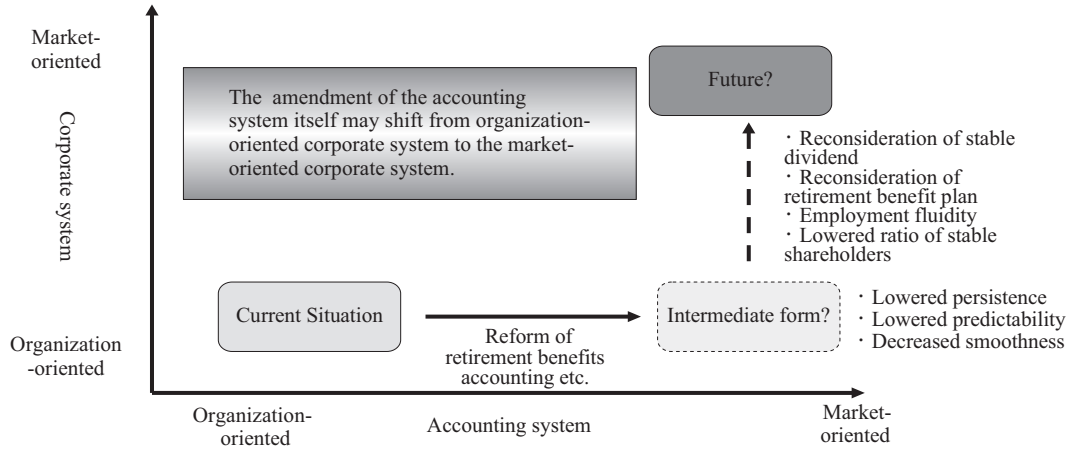
Suppose the revision of retirement benefits accounting that is primarily based on the approach 1 income that IASB (2008) recommended, is implemented now[4]. In this case, it is more likely that economic reality, which is mapped by the accounting system, becomes more volatile; the proportion of profit-making companies is augmented if it is in the strong economy, and the proportion of loss-making companies is augmented if it is in the weak economy. As a result, organization-oriented corporations make the "stable and long-term relationship with each stakeholders" difficult. This is because, if incomes become volatile, contracts and incentives become volatile.

Therefore, how does an accounting system reform like this affect Japanese companies? It will be difficult to maintain the behavioral patterns such as learning and accumulation, which Japanese companies have been good at through organization mechanism. This is because the behavioral patterns such as learning and accumulation tend to be based on a sense of mutual trust among members of the organization. Accounting system reform leads to the fragility of the contracts and transactions.

As a result, it is possible that Japanese companies have to change into a market-oriented

[4] According to the exposure draft "Defined Benefit Plans Proposed amendments to IAS19 *Employee Benefits*" announced by IASB in March, 2008, the volatility of actuarial gains or losses and such are to be included in retained earnings directly, without being reclassified.

FIG. 6. THE EFFECTS OF CHOICE OF ACCOUNTING SYSTEM ON CORPORATE SYSTEMS



corporate system from an organization-oriented corporate system. For example, it is also possible that they have to choose a dividend policy that is linked to business performance instead of a stable dividend. Else, it is also possible that they have to change from retirement benefits to retirement contributions plan.

What is going to be necessary in order to avoid these changes? There can be two major countermeasures.

One is to work on the IASB or another accounting standards setters to understand the differences in corporate systems and accounting systems actively. Ideal accounting systems can be different if corporate systems are different. Another countermeasure is to evolve contracts. Although accounting systems serve as a base of contracts and market decision makings, they are not beyond that, and if such contents which are appropriate for organization-oriented corporate system can be reflected to contracts and market evaluations without causing "functional fixation" in the ways of contractual contents and market evaluations, then its effects to the corporate systems would be minimized[5].

In either case, the relation between corporate systems and accounting systems is complementary, and reform of one side has significant effect on the other. Needless to say, easy discussion on the adoption or convergence on accounting standards is risky, and it is vital to discuss ideal accounting reforms for improving the competitiveness of corporate systems.

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[5] However, even if the retirement benefit system is changed, as long as the market is efficient and if information about the effect of the change can be obtained, it would be possible to consider that markets "see through" it.

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