

Title

"The setting of "asset value for recognized cost in net profit or loss" from the standpoint of asset and liability approach"

- Actuarial asset valuation methods applied to the accounting for post retirement benefits -

1. Background and Overview

As is well known, International Accounting Standards (IAS) and the United States Financial Accounting Standards (FAS) are due to be converged in the near future. As for the post retirement benefit accounting standards, they plan to be uniformed before 2011. The trends of the discussion for their united standards attract attentions around the world. In September 2006, in the first place the United States Financial Accounting Standards Board already published SFAS 158. In succession, recently the International Accounting Standards Board (IASB) has opened the discussion on amendments to IAS19 Employee Benefits, issuing discussion paper in the second place.

Such trends of revising accounting standards on post retirement benefits are basically due to the shift from the traditional revenue and expense view (RE approach) to the asset and liability view (AL approach). Previously, deferred recognition of the part of pension liability was broadly admitted. This accounting process is to stabilize the net periodic cost of post retirement benefits in line with the concept of the RE approach. However, it is an unusual process that exists only in the standards of post retirement benefit. Therefore, investors are critical of these accounting standards, because they are confusing and difficult to understand.

In 2005, the British standard FRS17 was issued and then in 2006, the United States standards FAS158 was issued. Under these standards, the amount still unrecognized (deferred) in 'net profit or loss' must be presented on the balance sheet according to the AL approach (immediate recognition). On the other hand, such a treatment is regulated in neither IAS 19 nor Japanese accounting standards for post retirement benefit. (However, as is well known, immediate recognition can be applied selectively in IAS 19.)

According to the introduction of AL approach in the United Kingdom and the United States, it seems that the immediate recognition on the balance sheet of all the changes in the asset and liability of post retirement benefits has internationally reached agreement. Although, in the first place, it is a controversial topic whether 'net profit or loss' should be displayed in 'comprehensive income' or not, we believe that 'net profit or loss' itself can comparably evaluate the periodic performance of the entity. Therefore, the subject of future discussions will mainly be focused on how to determine which part of the changes on balance sheet should be recognized to 'net profit or loss'. From these backgrounds, this paper is focusing on the topic, "the setting of asset value for recognized cost of post retirement benefits in 'net profit or loss' (called 'AV in net profit or loss') from the standpoint of AL approach". Specifically, first, we demonstrate that 'AV in net profit or loss' itself is different from the fair value recognized in the balance sheet. And we show three requirements that make the asset value appropriate. Then, in setting the asset value, we verify

that actuarial valuation methods established by actuaries can be applied. Finally, we compare some actuarial valuation methods with the traditional one, setting of expected rate of return on pension assets, and three methods proposed in the discussion paper of the IASB and investigate each feature by conducting simulations.

2. Latest discussions for revising IAS 19 in the discussion paper of the IASB

We can learn the latest trends of the revision of standards from the discussion paper of the IASB issued in March 2008. Following three methods are proposed in it.

1. All changes are recognized in 'net profit or loss'
2. Of all changes, service cost and actuarial gains or losses (in the liability side excluding due to fluctuations in the discount rate) are recognized in 'net profit or loss', changes in other parts (financial cost) recognized in other comprehensive income
3. Of all changes, service cost, interest cost, actuarial gains or losses (in the liability side excluding due to fluctuations in the discount rate), and dividends and interests of assets are recognized in 'net profit or loss', changes in other parts (remeasurement cost) recognized in other comprehensive income

Most importantly, it can be said that all proposals above are based upon the traditional RE approach. This is because the cost of post retirement benefits contains such components as "service cost" or "interest cost"; the cost is made up of flow-based components.

Thus, based on the proposals above and the view of AL approach, all the asset and liability changes can be classified into the following three categories.

Table 1 Classification of changes in the asset and liability side according to the three proposals in the discussion paper of the IASB

| Proposals | Classification of changes | Comprehensive income | |
|-----------|--|----------------------|----------------------------------|
| | | 'Net profit or loss' | Other comprehensive income (OCI) |
| 1 | Service cost | ○ | × |
| | Interest cost | ○ | × |
| | Changes in the liability side (excluding due to fluctuations in the discount rate) | ○ | × |
| | Changes in the liability side (due to fluctuations in the discount rate) | ○ | × |
| | Changes in the asset side (mainly due to investment gain or loss) | ○ | × |

| | | | |
|---|--|---|---|
| 2 | Service cost | ○ | × |
| | Interest cost | × | ○ |
| | Changes in the liability side (excluding due to fluctuations in the discount rate) | ○ | × |
| | Changes in the liability side (due to fluctuations in the discount rate) | × | ○ |
| | Changes in the asset side (mainly due to investment gain or loss) | × | ○ |
| 3 | Service cost | ○ | × |
| | Interest cost | ○ | × |
| | Changes in the liability side (excluding due to fluctuations in the discount rate) | ○ | × |
| | Changes in the liability side (due to fluctuations in the discount rate) | × | ○ |
| | Changes in the asset side (mainly due to investment gain or loss) | * | * |

○: recognized, *: partially recognized, ×: not recognized at all

According to the proposal above in the discussion paper of the IASB, at first, of all changes, ‘service cost’ is recognized as an essential cost in ‘net profit or loss’ in all the proposals. Then, Although ‘interest cost’ is recognized in ‘other comprehensive income (OCI)’ in proposal 2, there are no room for discussion about recognizing ‘interest cost’ in ‘net profit or loss’ in proposal 1 and 3. As for changes in the liability side (excluding due to fluctuations in the discount rate), they are generally smaller than the other two factors (except for ‘service cost’ and ‘interest cost’), so that it is likely that these changes will be recognized immediately in ‘net profit or loss’. Also, with regard to the change of liability (due to fluctuations in the discount rate), although it is controversial, basically there are no other choices than to reflect it to ‘net profit or loss’ or to OCI. Currently, the IASB tentatively decides to recognize it in OCI. Therefore, as in the following table 2, it is fair to say that the remained changes in the asset side will be the main focus of future discussions on how to recognize them in ‘net profit or loss’ and/or OCI.

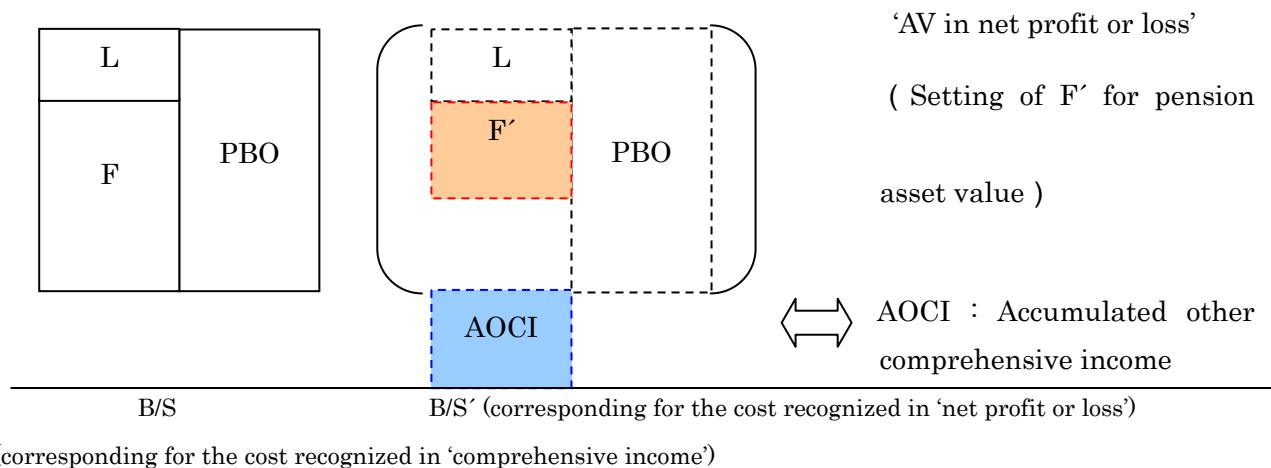
Table 2 Discussion of the future direction (except for ‘service cost’ and ‘interest cost’)

| Classification of changes | Comprehensive income |
|---|------------------------------------|
| Changes in the liability side (excluding due to changes in the discount rate) | ‘Net profit or loss’ |
| Changes in the liability side (due to changes in the discount rate) | ‘Net profit or loss’ and/or OCI |
| Changes in the asset side (mainly due to the investment gain or loss) | <Main focus of future discussions> |

3. 'AV in net profit or loss' from the standpoint of AL approach

As we noted, it is of great importance to decide which part of the changes in the asset side is recognized in 'net profit or loss'. According to Figure 1, the 'AV in net profit or loss' (shown as F') is different from the fair value of asset (shown as F), because the cost recognized in 'net profit or loss' is a part of the changes recognized in 'comprehensive income'. Therefore, it can be said that to decide the recognized cost in 'net profit or loss' is almost the same as to decide the value of assets (F').

Figure 1 Relation between the asset value in the balance sheet and the recognized cost



* Assuming that no changes in the discount rate

In this case, the difference ($F - F'$) between the amount of fair value (F) and the 'AV in net profit or loss' (F') itself is equal to the amount of accumulated other comprehensive income (AOCI) which was recognized in 'comprehensive income' but not in 'net profit or loss'. Therefore, as shown in Figure 1, considering the difference between the recognized cost and the corresponding asset value is the key essence to the recognized cost in 'net profit or loss' from the AL approach.

4. Application of actuarial valuation methods in setting the value of pension assets

From the standpoint of the asset evaluation, it is well known that actuarial valuation methods can be used for the pension funding rules or the Financial Accounting Standards (FAS) in the US. We believe their essential theory can be applied to 'AV in net profit or loss' with the view of AL approach. Following Table 3 shows the three key requirements that make the value of asset appropriate from the standpoint of AL approach.

Table 3 Three key requirements that make the value of asset appropriate

| |
|---|
| <ol style="list-style-type: none"> 1. Co-movement to the fair value 2. Exclusion of discretion of employers 3. Stability of cost |
|---|

In Table 4 three different methods generally used as actuarial valuation methods in the setting of the value of pension assets in Japan are listed. In these methods, all the returns on pension assets are theoretically classified into two categories, “base income” and “smoothing”. The corresponding amount for smoothing will be gradually amortized and recognized into the asset value for the smoothing period. It is not too much to say that “co-movement to the fair value” can be secured as a sort of automatic adjustment function.

And the difference between the fair value and the value of actuarial valuation methods, that is, AOCI, is able to have clear definition as a temporary account that was not yet recognized in ‘net profit or loss’. Moreover, in this case, in the setting of asset value, “exclusion of discretion of employers” is automatically secured.

On the other hand, according to the conventional standards, “expected rate of return on pension assets” is generally set as a future prospect of the value of pension assets. However, it means that this method is based on the premise that the value of pension asset will steadily increase with the expected returns. This method contributes to “stability of cost” in ‘net profit or loss’, but not to “co-movement to the fair value” and “exclusion of discretion of employers”.

In fact, the IASB expressed the opinion that ‘entities should not divide the return on assets into an expected return and an actuarial gain or loss’ in the discussion paper. And it also referred to ‘the subjectivity inherent in determining the expected rate of return provides entities with an opportunity to choose a rate with a view to manipulating profit or loss’. Thus, it is probable that the conventional method, ‘the expected rate of return’, will be revised.

Considering setting asset value related to the fair value of pension assets in the framework of conventional standards, setting averaged realized investment performance rate for the expected rate of return could be a reasonable alternative. Actually, some entities have recently adopted this method in Japan.

Thus, under the recent expansion of AL approach, the asset value has to meet three key requirements that verify its value is appropriate as the ‘AV in net profit or loss’. And it is fair to say that the actuarial valuation methods in the setting of the value of pension assets are reasonable methods that meet these requirements.

Table 4 Comparisons in the setting of the value of assets

| Valuation methods | | Base income part | Smoothing part | Features |
|--|---|--|--|--|
| Conventional standards (Setting of expected rate of return) | | Forecasted future income based on the expected returns of assets considering the allocation of each asset class. | All the changes except for base income | No functions for “co-movement to the fair value” and "exclusion of discretion of employers” |
| Actuarial valuation method | Moving average of fair value method | Income gain (stable revenue such as stock dividends and bond interests) | | <ul style="list-style-type: none"> • With automatic adjustment functions to the fair value • Stability of the evaluated value is emphasized in the settings of the value of assets |
| | Smoothing the difference between the past average returns and realized returns method | Average realized return on pension assets. | | <ul style="list-style-type: none"> • With automatic adjustment functions to the fair value • Co-movement of the evaluated value is emphasized in the settings of the value of assets |

| | | | | |
|--|---|---|--|---|
| | Smoothing the unrealized returns method | Realized return (income gain, capital gain/loss). | | <ul style="list-style-type: none"> With automatic adjustment functions to the fair value Recognition of realized returns is emphasized in the settings of the value of assets |
|--|---|---|--|---|

Table 5 Application of actuarial valuation methods to the proposals of the IASB

| Actuarial valuation methods and the proposals of the IASB | | Base income part | Smoothing part | Remarks |
|---|-------------------------------------|--|--|---|
| Proposal 1 | Fair value | Income gain Capital gain/loss Unrealized gain/loss | Zero | <ul style="list-style-type: none"> ‘Smoothing’ is equal to the amount recognized in AOCI that is subject to recycling if required. The IASB shows the reluctance ‘to introduce recycling into a standard that currently does not require it, pending its work in the financial statement presentation project’. |
| Proposal 2 | Moving average of fair value method | Zero (‘Interest cost’, considering the changes in the liability side) | Income gain Capital gain/loss Unrealized gain/loss | |
| Proposal 3 | Moving average of fair value method | Income gain | Capital gain/loss Unrealized gain/loss | |

5. Comparison of valuation methods in pension assets by conducting simulations

In this paper, we compare with seven methods listed in Table 4 and 5 above each other and figure out the feature of them respectively, by conducting numerical simulations.

Premises of simulations

A. Setting of the value of pension asset

<Conventional method (future forecasting) >

- The expected rate of return: 2%, 4.57% and 5%

<Actuarial valuation method>

- Moving average of fair value method : smoothing period is 5 years

<Proposals shown in discussion paper of the IASB> all three methods proposed in Table 5

- Proposal 1 : Using fair value
- Proposal 2 : Moving average of fair value method Base income : 2% (same as discount rate)
- Proposal 3 : Moving average of fair value method Base income : realized income gain

B. Parameters

Table 6-1 Realized investment performance in Japan (rates of pension assets)

: from Jan. 1990 to Dec. 2007

| Index | NOMURA-BPI Yen | | | TSE Yen | | |
|-------|----------------|--------------|-------------|--------------|--------------|-------------|
| | Total Return | Capital Gain | Income Gain | Total Return | Capital Gain | Income Gain |
| 1990 | 2.208% | -3.934% | 6.142% | -39.436% | -39.871% | 0.435% |
| 1991 | 12.012% | 5.542% | 6.470% | -0.394% | -1.179% | 0.785% |
| 1992 | 10.054% | 4.025% | 6.029% | -23.023% | -23.770% | 0.747% |
| 1993 | 12.501% | 6.907% | 5.593% | 10.975% | 10.030% | 0.945% |
| 1994 | -1.345% | -6.274% | 4.929% | 9.115% | 8.314% | 0.801% |
| 1995 | 11.965% | 7.134% | 4.831% | 2.087% | 1.316% | 0.771% |
| 1996 | 5.188% | 1.129% | 4.059% | -6.064% | -6.841% | 0.777% |
| 1997 | 5.653% | 1.919% | 3.734% | -19.412% | -20.238% | 0.826% |
| 1998 | 0.404% | -2.982% | 3.386% | -6.568% | -7.559% | 0.991% |
| 1999 | 5.354% | 2.283% | 3.071% | 59.688% | 58.702% | 0.986% |
| 2000 | 2.056% | -0.547% | 2.603% | -24.961% | -25.582% | 0.621% |
| 2001 | 3.314% | 1.054% | 2.260% | -18.905% | -19.685% | 0.780% |
| 2002 | 3.329% | 1.389% | 1.940% | -17.499% | -18.438% | 0.939% |
| 2003 | -0.712% | -2.341% | 1.629% | 25.195% | 23.992% | 1.203% |
| 2004 | 1.306% | -0.171% | 1.476% | 11.337% | 10.154% | 1.183% |
| 2005 | 0.752% | -0.646% | 1.398% | 45.226% | 43.889% | 1.337% |
| 2006 | 0.206% | -1.198% | 1.405% | 3.023% | 1.904% | 1.119% |
| 2007 | 2.656% | 1.148% | 1.508% | -11.106% | -12.358% | 1.252% |

Table 6-2 Realized investment performance in Japan (rates of pension assets)

: from Jan. 1990 to Dec. 2007

| Index | Citigroup (ex Japan) Yen | | | MSCI Yen | | | Guaranteed Interest Contract |
|-------|--------------------------|--------------|-------------|--------------|--------------|-------------|------------------------------|
| | Total Return | Capital Gain | Income Gain | Total Return | Capital Gain | Income Gain | |
| 1990 | 6.393% | -2.748% | 9.136% | -8.937% | -12.388% | 3.451% | 6.746% |
| 1991 | 5.291% | -3.167% | 8.491% | 13.517% | 9.803% | 3.714% | 6.316% |
| 1992 | 4.377% | -3.756% | 8.187% | 1.976% | -1.232% | 3.208% | 5.266% |
| 1993 | -1.270% | -8.272% | 7.080% | 9.300% | 6.622% | 2.678% | 4.288% |
| 1994 | -9.777% | -16.586% | 6.859% | -10.110% | -12.532% | 2.423% | 4.219% |
| 1995 | 25.812% | 17.951% | 7.815% | 33.720% | 30.865% | 2.855% | 3.473% |
| 1996 | 19.534% | 11.932% | 7.538% | 38.480% | 35.715% | 2.765% | 3.132% |
| 1997 | 13.648% | 6.677% | 6.950% | 40.056% | 37.704% | 2.352% | 2.364% |
| 1998 | 8.121% | 3.155% | 3.388% | 12.578% | 12.211% | 1.858% | 1.512% |
| 1999 | 11.965% | 7.134% | 4.831% | 2.087% | 1.316% | 0.771% | 0.771% |
| 2000 | 2.056% | -0.547% | 2.603% | -24.961% | -25.582% | 0.621% | 0.621% |
| 2001 | 3.314% | 1.054% | 2.260% | -18.905% | -19.685% | 0.780% | 0.780% |
| 2002 | 3.329% | 1.389% | 1.940% | -17.499% | -18.438% | 0.939% | 0.939% |
| 2003 | -0.712% | -2.341% | 1.629% | 25.195% | 23.992% | 1.203% | 1.203% |
| 2004 | 1.306% | -0.171% | 1.476% | 11.337% | 10.154% | 1.183% | 1.183% |
| 2005 | 0.752% | -0.646% | 1.398% | 45.226% | 43.889% | 1.337% | 1.337% |
| 2006 | 0.206% | -1.198% | 1.405% | 3.023% | 1.904% | 1.119% | 1.119% |
| 2007 | 2.656% | 1.148% | 1.508% | -11.106% | -12.358% | 1.252% | 1.252% |

* Performance of 'Guaranteed Interest Contract' (GIC) is alternated by subscriber's yield of 10-y national bond

Performances of 'Short-term Fund' and 'Others' are based on the premise of no return

Table 7 Asset allocation of pension assets

: Average ratio of each asset class in 6 years from FY 2001 to FY 2006
(fiscal year; starting from April to March)

| Asset | Bond (Nation) | Stock (Nation) | Bond (Foreign) | Stock (Foreign) | Guaranteed Interest Contract | Short- term Fund | Others | Total |
|-------|------------------|-------------------|-------------------|--------------------|------------------------------------|------------------------|--------|---------|
| Ratio | 21.55% | 28.62% | 11.44% | 17.40% | 10.12% | 5.16% | 5.73% | 100.00% |

* Performances of 'Short-term Fund' and 'Others' are based on the premise of no return

C. Others

Service cost in each fiscal year : 4.0% of the obligation of the post retirement benefit

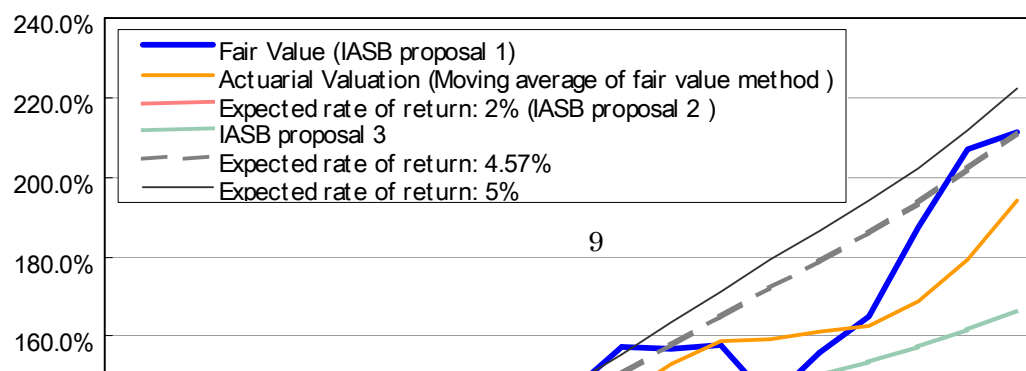
Benefit payment in each fiscal year : 2.5% of the obligation of the post retirement benefit

Discount rate : 2.0% (general setting in Japan)

6. Results

Figure 2 shows the transition of the 'AV in net profit or loss', applying the realized return from Jan. 1990 to Dec. 2007 in Japan.

Figure 2 Transition of 'AV in net profit or loss'
From Jan. 1990 to Dec. 2007



* Setting the starting point at Jan. 1st 1990 as 100.0%

According to Figure 2, as we noted, “future forecast method using expected rate of return” and “the methods shown in proposal 2 and 3 of the IASB” ground the premises that the value of pension asset will steadily increase. For example, if the expected rate of return is 4.57%, the ‘AV in net profit or loss’ is equal to the fair value in the beginning of 2008. However, as it happens, it is too difficult to prospect the future value of pension asset appropriately. As a consequent, the validity of this method could be undermined if the value of asset is totally different from the fair value of pension asset.

Meanwhile, in the actuarial valuation methods established by actuaries, the evaluated value absolutely moves in tandem with the fair value. Of all the three actuarial methods mentioned above, we adopted “Moving average of fair value method” for the simulations in which the stable revenue such as stock dividends and bond interests (income gain) are recognized to ‘net profit or loss’ and the other remaining returns recognized in OCI. According to figure 2, we can find the trends that ‘AV in net profit or loss’ are linked to the fair value and move stably.

Figure 3 Transition of recognized cost in ‘net profit or loss’.
FY 1990 to FY2007 (FY: calendar year)

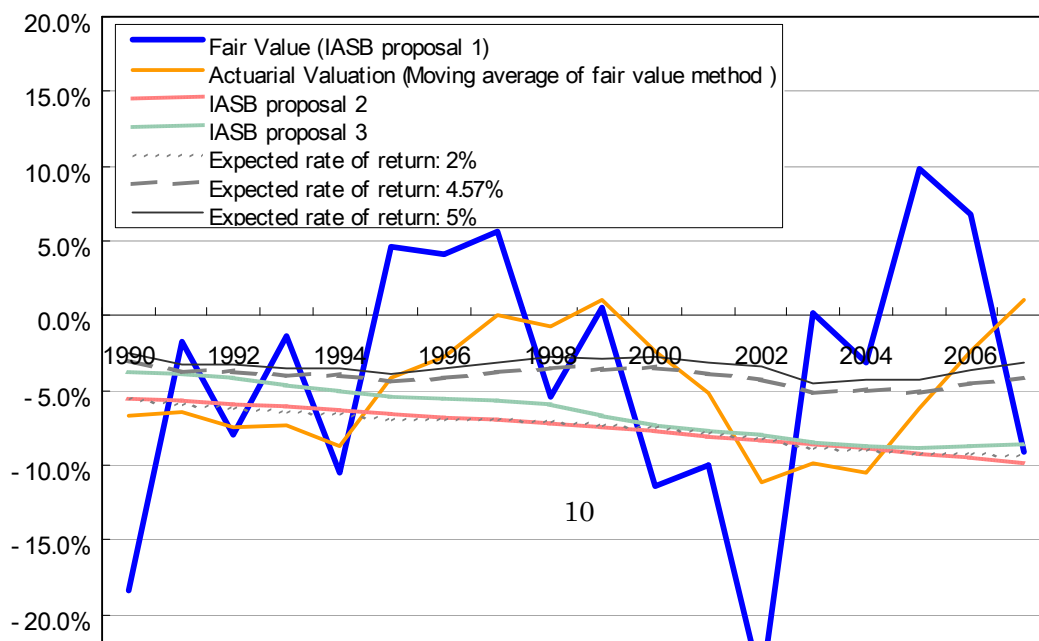


Figure 3 shows the transition of recognized cost in 'net profit or loss'. If using fair value (proposal 1 of the IASB), as might be expected, the cost recognized in 'net profit or loss' fluctuates dramatically each year. As for the method of 'expected rate of return' or the methods of proposal 2 and 3 in the discussion paper of the IASB to calculate recognized cost in 'net profit or loss', it is true that the cost is stable. Nevertheless, if the assuming asset value doesn't go along with the fair value of asset, the validity of this method can be undermined. In contrast, if using actuarial valuation methods to calculate recognized cost in 'net profit or loss', the cost moves in tandem with the volatile realized return on pension assets every year, maintaining its stability.

Figure 4 Transition of AOCI (From Jan. 1990 to Dec. 2007)

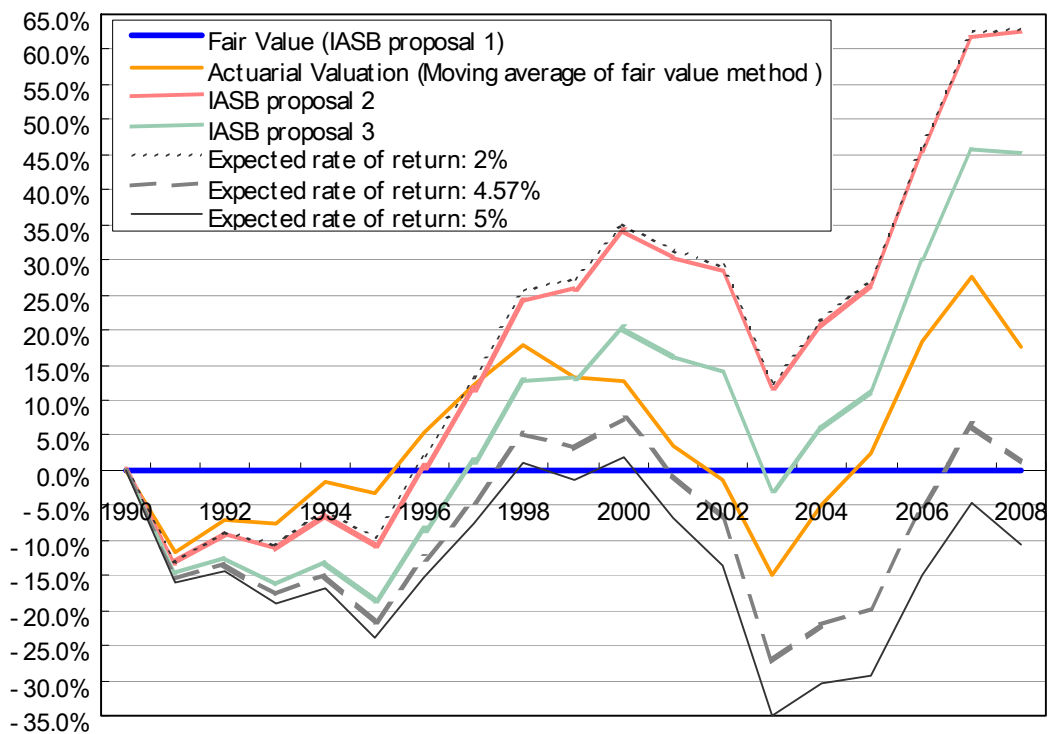


Figure 4 shows the transition of AOCI. This amount is the difference between the fair value and the 'AV in net profit or loss'.

As mentioned above, if the expected rate of return is set at 4.57%, AOCI is zero, because 'AV in net profit or loss' is equal to the fair value at the beginning of 2008. However, if the set rate is far from 4.57%, AOCI can be steadily piled up and not be extinguished.

And much the same is almost true on the methods proposed in the proposal 2 and 3 of discussion

paper of the IASB, unless ‘recycling process’ is introduced. It is possible that AOCI is piled up and not be extinguished. However, according to the discussion paper, as shown in table 5, the IASB shows the reluctance ‘to introduce recycling into a standard that currently does not require it, pending its work in the financial statement presentation project’. Therefore, it can be fair to say that some mechanisms such as ‘recycling process’ of amortizing AOCI have to be introduced.

Meanwhile, in the actuarial valuation methods, AOCI is able to have clear definition as a temporary account that was not yet recognized in ‘net profit or loss’ and the amount incurred in the past will be amortized by the end of the smoothing period. Thus, it is fair to say that actuarial valuation methods are reasonable methods because these have automatic functions of which asset values automatically follow fair value.

7. Conclusions

In this paper, we introduced some proposals about the issues, the recognition of the cost of post retirement benefits from the view of AL approach and its classification between ‘net profit or loss’ and ‘other comprehensive income’. The conclusions demonstrated in this paper are as follows.

- According to the latest discussion paper of the IASB, it can be said that in deciding the net periodic cost of post retirement benefits, of all the asset and liability changes, which part of changes in asset side are recognized in ‘net profit or loss’ will be the main focus in the future.
- Evaluating of ‘AV in net profit or loss’ different from the fair value recognized in the balance sheet itself is of great importance to set the cost in ‘net profit or loss’ with the view of AL approach.
- We evaluated seven methods, three patterns of ‘expected rate of return’, three ‘proposals in the discussion paper of the IASB’ and ‘actuarial valuation method (moving average of fair value method)’, by conducting simulations from the view of asset valuation and the three key requirements that make the asset value appropriate, such as “co-movement to the fair value”, “exclusion of discretion of employers” and “stability of cost”.
- Adopting the actuarial methods as the ‘AV in net profit or loss’, is a rational process in the following four points;
 1. “Stability of cost ”
: Cost is linked to the volatile realized return on pension assets every year, maintaining its stability.
 2. "Co-movement to the fair value "
: Evaluated value absolutely moves in tandem with the fair value.
 3. "Exclusion of discretion of employers”
: No discretion for employers to set the value of asset because the value is automatically linked to the fair value.
 4. “Clear definition of AOCI”

: Difference between the fair value of asset and the 'AV in net profit or loss', that is, AOCI, is able to have clear definition as a temporary account that was not yet recognized in 'net profit or loss' and the amount incurred in the past will be amortized by the end of the smoothing period.

- According to the discussion paper, the IASB shows the reluctance 'to introduce recycling into a standard that currently does not require it, pending its work in the financial statement presentation project'. In this case, however, AOCI can be steadily piled up and not be extinguished. Therefore, it can be fair to say that some mechanisms such as 'recycling process' of amortizing AOCI have to be introduced.

The IASB's discussion paper in March 2008 makes the discussion of the revision of accounting standards (IAS19: Employee Benefits) clear. We hopefully believe that open and active discussion will lead to the fair, useful and meaningful information for investors, employers, and all the others.