An Empirical and Comparative Institutional Investigation of Pension Asset and Liability — The Japanese Case —

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I. Introduction

In spite of the globalization of corporate behavior and securities markets, economic institutions have diversity and difference. Like most economic and social institutions, financial accounting standards vary from country to country. In Japan, one of the most controversial and emergent accounting issues is pension accounting. There are two reasons why pension accounting has attracted a great deal of attention in recent years. One is that the Japanese pension accounting standard has been quite different from the U. S. GAAP, which is in some sense "advanced," and the International Accounting Standards (IAS). The other is that Japan is coming to be one of the most aged societies in the world. Easily supposed, aging impose a great burden on corporate management, which means increasing labor costs.

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It is not all exaggeration to say that Japanese financial reporting as to employers' pension is 30 years behind the United States. At the moment, pension assets and liabilities are off-balance items. In addition, pension information disclosure is not sufficient under the Securities and Exchange Law. However, as a serious situation has come to be unveiled and as financial risk related to private pension has come to be recognized, the pension accounting standard setting process began in July 1996.

Empirical evidence is needed along with normative or conceptual thinking when facing a new accounting standard setting situation. I propose a "Balance sheet strategy" for standard setters of pension accounting through empirical and comparative institutional analysis.

This study will also suggest how to recognize pension assets and/or pension liabilities on a balance sheet in countries such as European and Asian countries where have only disclosure requirements and no provisions regarding balance sheet recognition.

The reminder of this paper is organized in the following manner. Section Ⅱ summarizes the controversy with respect to pension accounting and a survey of prior empirical research directly related to our study. Section Ⅲ describes the research design. Section Ⅳ presents empirical results and some implications will be given in Section Ⅴ. Comparative institutional analysis and balance sheet recognition strategy for standard setters are discussed in Section Ⅵ.

Ⅱ. Pension Accounting Controversy & Prior Research

1. Pension Accounting Controversy

As in many accounting research areas, pension accounting also incorporates some complicated topics. They are classified into two categories. One is Income Statement related which mainly deals with

pension expense and the other being Balance Sheet which is concerned with pension assets and liabilities. This study concentrates on the Balance Sheet related category.

To pursue our discussion, it is convenient to divide into two issues. First issue is whether pension assets and pension liabilities are valued as corporate assets and liabilities or not in the Japanese securities markets. This relates to pension fund property rights, in other words, ownership of pension assets and liabilities.

The second point at issue is alternative measures related to pension liabilities. The U. S. GAAP (SFAS 87) and IAS include three pension liability measures, VBO (Vested Benefit Obligation), ABO (Accumulated Benefit Obligation), and PBO (Projected Benefit Obligation). VBO is the actuarial present value of vested benefits for which a service is no longer required. This is a legal liability for a firm.

ABO is the actuarial present value of benefits (whether vested or nonvested) attributed by the pension benefit formula to employee service rendered before a specified date and based on employee service and compensation prior to that date. PBO is the actuarial present value of a date of all benefits attributed by the pension benefit formula to employee service rendered prior to that date.

PBO is measured by using assumptions as to future compensation levels if the pension benefit formula is based on those future compensation levels. PBO differs from ABO by including effects of future compensation levels. Generally, PBO is greater than ABO when including future salary increases. And ABO is greater than VBO because ABO also includes nonvested obligation.

Japanese GAAP may need to introduce one of these three measures in the near future. This study investigates which measures are perceived as relevant to Tokyo Stock Exchange (TSE) participants

thorough an analysis of VBO, ABO, and PBO.[1]

2. Prior Research

Several studies have examined the information content of pension assets and liabilities. For example, Landsman [1986] examined how pension assets and liabilities disclosed under SFAS 36 are used by securities markets in America using cross-sectional regressions. And he found evidence to support the notion that pension fund property rights lie fully with the firm.

Barth [1991] has also investigated pension assets and liabilities question by using cross-sectional regression models. The research question in her study is which measures of pension assets and liabilities most closely reflect those investors implicitly use in valuing a firm. Barth [1991] found that the fair value of plan assets and all three measures are used in valuing a firm. With respect to liabilities, she found ABO especially exhibits significantly less measurement error than others. How in the Japanese securities markets? We will investigate in this issue over the next four sections.

Ⅲ. Research Design

1. Data

In Japan, the Securities and Exchange Law has required corporations under its jurisdiction to disclose only "pension assets or past service liabilities" in footnotes. In my view, this disclosure provision is quite insufficient for two reasons. First, this disclosure provision requires only either pension assets or past pension liabilities. In general, investors can not accurately value a company if they do not posses information on both assets and liabilities. Secondly, pension liabilities are not limited to "past service" liabilities. As a result, there is not enough pension information to do empirical research based on

Japanese firms.

Fortunately, some leading Japanese firms are preparing financial statements complying with the U. S. GAAP, SFAS87 with regard to pension information. We choose firms as our samples which have continuously disclosed pension information under SFAS 87 from 1991 to 1996. This resulted in 23 firms in each year and 138 firms in the pooled data. Descriptive firm statistics and correlation matrix are

Table 1: Descriptive Firm Statistics **Yen in Millions**

		MVE	BVA	BVL	PA	VBO	ABO	PBO
1991	Mean	911,402	2,764,341	2,117,784	115,558	123,382	147,530	187,552
	Median	745,166	1,549,407	873,977	90,695	102,314	104,258	113,733
	S.D	534,923	2,947,395	2,780,783	113,801	141,859	180,892	226,739
1992	Mean	889,745	2,610,877	1,967,662	126,091	137,924	163,410	205,712
	Median	730,723	1,571,441	855,132	105,936	110,280	112,320	121,812
	S.D	522,439	2,658,519	2,492,042	123,877	154,724	195,523	243,223
1993	Mean	1,087,216	2,490,812	1,852,653	141,499	156,442	182,068	223,399
	Median	990,617	1,577,169	865,502	122,463	120,209	122,714	133,874
	S.D	660,671	2,423,935	2,262,490	136,668	169,992	208,537	257,678
1994	Mean	965,044	2,563,282	1,896,631	149,076	174,257	201,409	243,300
	Median	854,250	1,654,876	918,900	130,480	129,338	131,961	146,056
	S.D	542,321	2,489,924	2,297,934	137,427	183,345	223,141	270,308
1995	Mean	1,277,890	2,798,656	2,060,320	173,169	209,716	240,188	289,994
	Median	1,069,011	1,719,871	937,819	137,544	151,618	166,065	204,072
	S.D	748,638	2,669,582	2,443,665	165,253	207,679	248,544	300,070
1996	Mean	1,361,746	2,919,608	2,117,842	191,405	245,233	279,891	334,968
	Median	1,062,079	1,831,680	941,317	148,833	186,457	201,446	216,595
	S.D	943,387	2,712,759	2,470,283	182,947	247,486	295,773	353,412
1991-1996	Mean	1,082,174	2,691,263	2,002,149	149,466	174,492	202,416	247,488
	Median	919,039	1,638,339	912,355	111,390	112,402	128,407	148,496
	S.D	687,744	2,611,015	2,420,483	144,987	188,792	228,952	277,942

S.D: standard deviation

Table 2: Correlation Matrix of pooled data

	MVE	BVA	BVL	PA	VBO	ABO	PBO
MVE	1						
BVA	0.475	1					
BVL	0.367	0.990	1				
PA	0.684	0.431	0.336	1			
VBO	0.609	0.430	0.338	0.949	1		
ABO	0.620	0.435	0.344	0.960	0.966	1	
PBO	0.646	0.421	0.325	0.972	0.984	0.995	1

shown in Table 1 and Table 2. MVE is the market value of equity at the end of fiscal year.

2. Basic Model

This study adopts a basic model following Landsman [1986] and Barth [1991] as follows[2]. Theoretical model is an equation (1).

$$MVE = MVA' - MVL' \cdots\cdots (1)$$

MVE : Market Value of Equity

MVA': Market Value of Assets

MVL': Market Value of Liabilities

This is the balance sheet equation. We can divide MVA' and MVL' into non-pension items and pension items as in equation (2).

$$MVE = (MVA + PA) - (MVL + PL) \cdots\cdots (2)$$

MVE (Market Value of Equity)

MVA (Market Value of Assets other than pension)

MVL (Market Value of Liabilities other than pension)

PA (Fair value of Pension Assets)

PL (Present value of Pension Liabilities)

In practice, it is difficult to measure the market value of assets and liabilities other than pensions. In Japan, they are still unobservable. Hence book values are substituted for market values in equation (2), recognizing that this causes unavoidable measurement errors. This leads to equation (3). i denotes firms.

$$MVE_i = \beta_0 + \beta_1 BVA_i + \beta_2 BVL_i + \beta_3 PA_i + \beta_4 PL_i + \varepsilon_i \cdots\cdots\cdots (3)$$

BVA: (Bookvalue of Assets other than pension)

BVL: (Bookvalue of Liabilities other than pension)

PA: (Fair value of Pension Assets)

PL: (Present value of Pension Liabilities)

With respect to PL, in order to compare the information content of VBO, ABO and PBO respectively, each is put into equation (3) as an independent variable. Therefore, three econometric models, as follows, are used to test our hypothesis.

$$MVE_i = \beta_0 + \beta_1 BVA_i + \beta_2 BVL_i + \beta_3 PA_i + \beta_4 VBO_i + \varepsilon_i \quad (3A)$$

$$MVE_i = \beta_0 + \beta_1 BVA_i + \beta_2 BVL_i + \beta_3 PA_i + \beta_4 ABO_i + \varepsilon_i \quad (3B)$$

$$MVE_i = \beta_0 + \beta_1 BVA_i + \beta_2 BVL_i + \beta_3 PA_i + \beta_4 PBO_i + \varepsilon_i \quad (3C)$$

This study aims at verifying whether pension assets and liabilities are valued as corporate assets and liabilities or not. Hence, our hypothesis here can be set as follows.

H_{N1}: In Japanese securities markets, pension assets and liabilities are not valued as corporate assets and liabilities.

H_{A1}: In Japanese securities markets, pension assets and liabilities are valued as corporate assets and liabilities.

To compare with the basic model, we use a model without pension variables shown as equation (4), and also regressed.

$$MVE_i = \beta_0 + \beta_1 BVA_i + \beta_2 BVL_i + \varepsilon_i \quad \cdots\cdots\cdots\cdots (4)$$

3. Net Model

In a multiple regression analysis, we sometimes face a multicollinearity problem. We adopt a "Balance sheet model" in this study. Balance sheet items (debit and credit) are systematically related in a double-entry bookkeeping system. Especially, simple correlations of the pension variables with each other and non-pension variables with each other exceed 0.9. To mitigate this problem, we set a net model as equation (5). In this Net model, Non-pension net assets (BVA-BVL) and Net pension assets (PA-PL) are independent variables.

$$MVE_i = \beta_0 + \beta_1 (BVA_i - BVL_i) + \beta_2 (PA_i - PL_i) + \varepsilon_i \quad \cdots\cdots\cdots (5)$$

Here we also use three PL variables (VBO, ABO, PBO) independently, so equation (5) also has three derivative models as follows.

$$MVE_i = \beta_0 + \beta_1 (BVA_i - BVL_i) + \beta_2 (PA_i - VBO_i) + \varepsilon_i \quad \cdots\cdots\cdots (5a)$$

$$MVE_i = \beta_0 + \beta_1 (BVA_i - BVL_i) + \beta_2 (PA_i - ABO_i) + \varepsilon_i \quad \cdots\cdots\cdots (5b)$$

$$MVE_i = \beta_0 + \beta_1 (BVA_i - BVL_i) + \beta_2 (PA_i - PBO_i) + \varepsilon_i \quad \cdots\cdots\cdots (5c)$$

Using the Net model, we will next test the hypothesis as below.

H_{N2}: In Japanese securities markets, net pension assets (liabilities) are not valued as corporate net assets (liabilities).

H_{A2}: In Japanese securities markets, net pension assets (liabilities) are valued as corporate net assets (liabilities).

Ⅳ. Empirical Results[3]

1. Regression without pension variables

Table 3 contains the summary statistics associated with the estimation of equation (4), which excludes PA and PL from the regression model, for 1991-1996. The coefficient values of both BVA and BVL are statistically significant.

Table 3: Regression without pension variables

$$MVE_i = \beta_0 + \beta_1 BVA_i + \beta_2 BVL_i + \varepsilon_i$$

	Adj.R^2	β_0	β_1	β_2
1991	0.69	187,910	1.06	-1.04
		[1.59]	[6.46] **	[-5.99] **
1992	0.81	106,829	1.14	-1.12
		[1.18]	[8.95] **	[-8.21] **
1993	0.64	174,871	1.33	-1.30
		[1.07]	[5.69] **	[-5.18] **
1994	0.74	125,265	1.22	-1.21
		[1.06]	[7.05] **	[-6.43] **
1995	0.81	79,021	1.60	-1.59
		[0.57]	[8.58] **	[-7.81] **
1996	0.79	-34,491	1.85	-1.90
		[0.19]	[8.71] **	[-8.11] **
1996-1996	0.74	81,475	1.43	-1.42
		[1.39]	[17.93] **	[-16.54] **

[t] : t-statistics
**: statistically significant at the 1% level
* : statistically significant at the 5% level

2. Basic model

Table 4 describes the results associated with the estimation of equation (3), Basic models. The signs of coefficient values are as expected, β_3 are positive and β_4 are negative. Though the t-value at the early stage are not high enough, they show a consistent tendency to

increase. In 1995, both β_3 and β_4 (all of the VBO, ABO, and PBO model) are statistically significant at the 5 % level which means H_{N1}can be rejected. In 1996, this tendency is intensified. β_3 and β_4 are statistically significant at the 1 % level in all three models. Judging from this evidence, TSE participants used pension assets and liabilities' information when they valued firms in at least 1995 and 1996. Pooled data shown at the bottom of the table reinforce this evidence (statistically significant at the 1% level).

Table 4: Results of the Basic Model

$$MVE_i = \beta_0 + \beta_1 BVA_i + \beta_2 BVL_i + \beta_3 PA_i + \beta_4 PL_i + \varepsilon_i$$

1991	Adj.R^2	β_0	β_1	β_2	β_3	β_4
VBO	0.70	161,821	1.03	-1.00	2.33	-1.83
		[1.34]	[4.39] **	[-4.20] **	[1.38]	[-14.2]
ABO	0.69	149,902	1.02	-1.00	2.22	-1.35
		[1.20]	[4.33] **	[-4.14] **	[1.23]	[-1.24]
PBO	0.68	146,265	1.06	-1.04	1.97	-0.97
		[1.12]	[4.33] **	[-4.16] **	[1.02]	[-0.99]

1992	Adj.R^2	β_0	β_1	β_2	β_3	β_4
VBO	0.83	99,671	1.04	-1.02	1.88	-1.20
		[1.09]	[5.85] **	[-5.59] **	[1.65]	[-1.36]
ABO	0.82	98,774	1.04	-1.01	1.49	-0.66
		[1.03]	[5.66] **	[-5.41] **	[1.23]	[-0.89]
PBO	0.81	103,857	1.04	-1.02	1.16	-0.35
		[1.05]	[5.52] **	[-5.28] **	[0.86]	[-0.51]

1993	Adj.R^2	β_0	β_1	β_2	β_3	β_4
VBO	0.67	108,092	1.44	-1.40	3.28	-3.04
		[0.66]	[4.45] **	[-4.24] **	[1.54]	[-1.81]
ABO	0.64	103,318	1.14	-1.37	2.71	-2.02
		[0.59]	[4.20] **	[-3.99] **	[1.11]	[-1.29]
PBO	0.62	109,538	1.43	-1.39	2.05	-1.27
		[0.60]	[4.12] **	[-3.93] **	[0.75]	[-0.88]

1994	Adj.R^2	β_0	β_1	β_2	β_3	β_4
VBO	0.77	88,266	1.20	-1.18	2.68	-2.03
		[0.76]	[4.84] **	[-4.59] **	[2.03]	[-2.13] *
ABO	0.77	74,691	1.18	-1.17	2.64	-1.62
		[0.62]	[4.73] **	[-4.49] **	[1.91]	[-1.99]
PBO	0.76	68,010	1.21	-1.20	2.61	-1.32
		[0.55]	[4.74] **	[-4.52] **	[1.78]	[-1.82]

1995	Adj.R^2	β_0	β_1	β_2	β_3	β_4
VBO	0.84	64,161	1.60	-1.58	2.81	-2.28
		[0.49]	[6.45] **	[-6.11] **	[2.20] *	[-2.28] *
ABO	0.84	37,554	1.58	-1.56	3.22	-2.15
		[0.28]	[6.31] **	[-5.97] **	[2.11] *	[-2.13] *
PBO	0.84	10,920	1.60	-1.59	4.77	-2.62
		[0.08]	[6.40] **	[-6.08] **	[2.22] *	[-2.19] *

1996	Adj.R^2	β_0	β_1	β_2	β_3	β_4
VBO	0.87	-85,392	2.05	-2.09	3.91	-3.51
		[-0.59]	[8.10] **	[-7.93] **	[2.88] **	[-3.70] **
ABO	0.88	-145,144	2.03	-2.07	5.17	-3.68
		[-1.05]	[8.28] **	[-8.11] **	[3.31] **	[-3.97] **
PBO	0.87	-203,644	2.09	-2.14	7.44	-4.24
		[-1.33]	[8.07] **	[-7.96] **	[3.18] **	[-3.53] **

1991-1996	Adj.R^2	β_0	β_1	β_2	β_3	β_4
VBO	0.77	55,388	1.38	-1.38	2.77	-2.07
		[0.97]	[12.67] **	[-12.18] **	[4.31] **	[-4.34] **
ABO	0.77	32,547	1.38	-1.37	3.07	-1.88
		[0.56]	[12.60] **	[-12.10] **	[4.30] **	[-4.27] **
PBO	0.76	18,205	1.42	-1.41	3.32	-1.69
		[0.30]	[12.66] **	[-12.21] **	[3.94] **	[-3.84] **

[t] : t-statistics

**: statistically significant at the 1% level

* : statistically significant at the 5% level

3. Net model

Table 5 contains the summary statistics from the estimation of equation (5), Net variable model. β_1 is continuously statistically significant in all of the three Net models at the 1% level. β_2 is significant in the VBO model in 1995 (5% level) which rejects H_{N2}. In 1996, β_2 is significant in all of the three models (1% level). Additionally, with pooled data, β_2 is significant when we regress equation (5) using VBO and ABO (1% level). Nonetheless, we can not find any significant results in the PBO Net model in the pooled data. We will discuss this point in detail below.

Table 5: Results of the Net Model

$$MVE_i = \beta_0 + \beta_1(BVA_i - BVL_i) + \beta_2(PA_i - PL_i) + \varepsilon_i$$

1991	Adj.R^2	β_0	β_1	β_2
VBO	0.71	170,628	1.16	1.56
		[1.47]	[7.37] **	[1.27]
ABO	0.70	169,521	1.19	0.76
		[1.39]	[6.47] **	[0.83]
PBO	0.69	174,846	1.18	0.39
		[1.39]	[5.50] **	[0.54]

1992	Adj.R^2	β_0	β_1	β_2
VBO	0.82	102,384	1.24	0.88
		[1.11]	[9.68] **	[1.00]
ABO	0.81	114,621	1.21	0.12
		[1.18]	[8.18] **	[0.17]
PBO	0.81	128,777	1.17	0.14
		[1.30]	[6.83] **	[0.27]

1993	Adj.R^2	β_0	β_1	β_2
VBO	0.68	128,897	1.57	2.76
		[0.81]	[6.86] **	[1.75]
ABO	0.65	136,767	1.57	1.29
		[0.81]	[5.79] **	[1.05]
PBO	0.80	150,345	1.55	0.62
		[0.86]	[5.00] **	[0.67]

1994	Adj.R^2	β_0	β_1	β_2
VBO	0.78	72,343	1.40	1.71
		[0.64]	[8.66] **	[1.92]
ABO	0.77	67,873	1.43	1.02
		[0.57]	[7.63] **	[1.47]
PBO	0.76	73,839	1.43	0.63
		[0.60]	[6.77] **	[1.14]

1995	Adj.R^2	β_0	β_1	β_2
VBO	0.85	43,788	1.77	2.07
		[0.35]	[10.91] **	[2.18] *
ABO	0.83	25,029	1.81	1.29
		[0.18]	[9.10] **	[1.52]
PBO	0.82	40,528	1.77	0.61
		[0.28]	[7.53] **	[0.86]

1996	Adj.R^2	β_0	β_1	β_2
VBO	0.87	-114,299	2.07	3.37
		[0.82]	[12.18]	[3.83] **
ABO	0.86	-179,364	2.21	2.64
		[-1.20]	[10.82] **	[3.43] **
PBO	0.82	-172,910	2.20	1.60
		[-0.99]	[8.20] **	[2.19] **

1991-1996	Adj.R^2	β_0	β_1	β_2
VBO	0.76	41,867	1.57	1.74
		[0.74]	[20.39] **	[3.76] **
ABO	0.75	34,130	1.60	1.04
		[0.57]	[17.81] **	[2.78] **
PBO	0.75	46,532	1.58	0.52
		[0.75]	[15.12] **	[1.71]

[t] : t-statistics

**: statistically significant at the 1% level

* : statistically significant at the 5% level

Ⅴ. Discussion and Implication

Judging from empirical results of the Basic model and the Net model, it seems reasonable to conclude that pension assets, VBO, ABO, and PBO are all perceived as corporate assets and liabilities. From these analysis, we have evidence consistent with the notion that pension fund property rights lie with the firm in Japan. In other words, investors regard that a pension fund as not separated from a sponsoring firm but rather integrated with it.

The first implication arises from the empirical analysis. That is, Japanese pension accounting standards should require firms to disclose pension assets (fair value), VBO, ABO, and PBO in a manner useful to investors. It is expected that participants in the capital markets will be able to value firms in a more sophisticated way if pension information is disclosed in an appropriate manner.

The second issue is alternative measures of pension liabilities. In the Basic model, statistically significant results are found in 1994-VBO model, 1995-VBO, 1995-ABO, 1995-PBO, 1996-VBO, 1996-ABO, 1996-PBO. It is remarkable that the pooled data show significant results at the 1% level. Net models show similar results. However, the pooled data which is more reliable given its larger number of samples, Net-PBO model is not significant in contrast to VBO and ABO. It may be that capital market participants regard PBO as relevant, but not as reliable as other measures. From the empirical results, it is safe to say that capital market participants regard ABO as the appropriate measure of pension liabilities.

Even those who adopt a normative approach have not solved the "future events problem" yet. They disagree on how to recognize and measure future events in current accounting system. It is unclear whether it is appropriate to include future events or not.

With respect to pension liabilities, future salary increases are

controversial issues. For example, some argue that point by citing definition of "liability" in Statements of Financial Accounting Concepts. FASB concepts Statements No. 6 defines, "Liabilities are probable future sacrifices of economic benefits arising from present obligation of a particular entity to transfer assets or provide services to other entities in the future *as a result of past transactions or evenvs.*" ABO is consistent with this definition because it is reasonable to hold that a duty of payment accrued at the point employee service was offered. VBO is the legal liability concept.

Then, are future salary increases consistent with that definition, or are they purely future events and not present liability? No definitive conclusion has yet been reached. In the end, a normative approach based on a Conceptual Framework can not support PBO at the moment.

Now we arrive at the second implication. That is, from both empirical and normative approaches, ABO is the preferable pension liability measure at the moment. Nonetheless, empirical analysis indicates the validity of PBO in some cases. I do not mean to entirely deny PBO. In the future, we should reconstruct models and continue empirical research in parallel with normative investigations.

Ⅵ. Comparative institutional analysis and B/S strategy for Standards Setters

In the previous sections, we argue about implications arising from empirical research. The main focus of this paper thus far has been on an aspect of information disclosure and not on balance sheet recognition. However, as is well known in Japan, pension assets and liabilities tend to increase rapidly (see Table 1). We should not leave this topic without thinking about how to recognize them on a firm's balance sheet (B/S strategy). In this final section, B/S strategy will de

discussed. In many countries including Japan, pension assets and liabilities are currently off-balance sheet although some form of information disclosure may be required in some countries. A discussion about B/S strategy may provide some food for thought for pension accounting standard setting in many countries.

First, we examine SFAS87 of the U.S.A, which includes an advanced content of pension accounting. As is generally known, SFAS 87 requires the recognition of net pension liabilities. Broadly speaking, net pension liabilities are ABO minus pension assets. SFAS 87 does not require the recognition of net pension assets even when pension assets are larger than ABO. As a result, I classify SFAS 87 as a "Net & asymmetric method". In contrast, I would like to advocate a "Gross & symmetric method." This would recognize both ABO (credit) and pension assets (debit) in the gross amount and not in the net amount. An "asymmetric method" seems inconsistent from the view point of double entry bookkeeping system. In addition, "Net method" creates a problem of "information loss." Let's think about a simple example. If pension assets and ABO are both 100 billion dollars, nothing is recognized on B/S in spite of the huge amount. This causes "information loss" when information users value a firm based on B/S.

SFAS 87 lists many reasons why "Net & Asymmetric Method" was adopted. But they are not convincing. In fact SFAS 87 itself explains, "The Board believes that it would be conceptually appropriate and preferable to recognize a net pension liability or asset" (paragraph.107).

Why, then, did SFAS 87 adopt seemingly inconsistent "Net & asymmetric method"? The most significant reason among many is what is called "historical path dependence" in comparative institutional analysis (CIA), which is an emerging research area in economics. CIA

tries to explain why various types of capitalism, like Anglo- Saxon capitalism, European capitalism (though there are many varieties in it), and Japanese capitalism exist. What kinds of economic institutions are generated and continue in a society? CIA says that it sometimes depends on "historical path dependence" and also depends on what kinds of other complementary social institutions exist. CIA also contends that there may be plural equilibria in economic society. A stable equilibrium is reached by a specific historical path, which may differ from country to country. Financial accounting standards also have their own historical path. In the United States, SFAS 87 was published in 1985. In those days pension accounting advanced in its use of mark-to-market concept. SFAS 115, which requires mark-to-market valuation of investments in debt and equity securities, was published in 1993, eight years after SFAS 87. In 1985, fair price valuation of securities had not been introduced yet. Most of pension assets are invested in the securities markets. So U. S. GAAP would have lost its internal consistency, if net pension assets had been recognized on B/S[4]. That is, general securities are valued on book value basis, and securities in pension assets are valued on fair value basis. This would have meant internal inconsistency. For this "historical path dependence," SFAS 87 had no choice but to recognize only net pension liabilities, which I call the "Net & asymmetric method."

Next I would like to turn our discussion to those many countries which haven't followed such a historical path, for example Japan and some countries. At the moment, neither B/S recognition as to pension items nor fair value valuation of securities is required in Japanese GAAP. Concerning securities, a new standard that requires fair value accounting including recognition on the B/S is scheduled to be effective for fiscal year beginning after April 1, 2000. However, the pension accounting standards project just started in June 1996, and will not be

implemented before the fair value accounting of securities is required. Historical order in Japan is therefore the reverse of the U.S.A. In the case of Japan, "historical path dependence" does not mean a restraint.

From these reasons, I suggest the "Gross & symmetric method" be adopted in Japan and in some countries that have introduced or now planning to introduce fair value accounting before pension accounting. This is a logical B/S strategy based on empirical analysis and CIA.

<Sample firms>

NIPPON MEAT PACKERS, INC.
WACOAL CORP.
Fuji Photo Film Co., Ltd.
KOMATSU Ltd.
KUBOTA CORPORATION.
TOSHIBA CORPORATION.
Mitsubishi Electric Corporation.
Makita Corporation.
OMRON CORPORATION.
NEC Corporation.
SONY CORPORATION.
TDK CORPORATION.
SANYO ELECTRIC CO., LTD.
PIONEER ELECTRONIC CORPORATION.
KYOCERA CORPORATION.
MURATA MANUFACTURING COMPANY, LTD.
HONDA MOTOR CO., LTD.
CANON INC.
RICOH COMPANY, LTD.
ITOCHU CORPORATION.
Marubeni Corporation.
Mitsubishi Corporation.
ITO-YOKADO CO., LTD.

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Notes

1 In addition to the major differences discussed here, there are other measurement-specific issues such as determination of interest rates, specification of actuarial cost methods, and recognition of gains and losses. They are not considered further here, as they are applied to all measures; this study focuses on fundamental differences among the measures.

2 This study adopts "B/S- based model". See Barth-Beaver-Landsman [1992] which uses a "P/L-based model". See also Amir [1993] which is based on the "Ohlson model" integrating P/L and B/S.

3 F-values are statistically significant at the 1% level for all models in this study.

4 Of course, recognizing net pension liabilities is also inconsistent.