Title: How we can keep employers in the DB world in Japan?Family Name: MatsubaraFirst Name: Ryo

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Abstract: In many countries, there is a tendency toward defined contribution plans. After Japanese government allowed defined contribution pension plans in 2001, many companies has converted all or a part of their DB plans into DC plans as in other countries. The new accounting standard for retirement benefit plans persuades employers into closing their DB plans. The paper discusses how we can keep employers in the DB world in Japan.

Key Words: Defined Benefit Plan, Lump-sum Benefit, Cash Balance Plan, Accounting for Retirement Benefits

1. Prevalence of Corporate Pension Plans in Japan

In Japan, defined contribution plans have been steadily growing into the DB world since October 2001, when the Defined Contribution Pension Plan Act (DCPA) became effective.

Before DCPA and the Defined Benefit Corporate Pension Plan Act (DBCPA), which became effective in 2002, there were two types of qualified pension plans, namely the Tax Qualified Pension Plan (TQPP) and the Employees' Pension Fund (EPF). The smaller companies typically used TQPPs, while the larger companies used EPFs.

The TQPP was introduced in 1962 and the number of plans reached a peak of 92,467 in 1993. Suffering from the aftereffects of the burst bubble in 1990's, many plan sponsors of the TQPP terminated their TQPPs. The number of TQPPs was reduced to 77,555 in 2000. The application of the new accounting standard of retirement benefit plans in 2000 and the enforcement of DCPA in 2001 caused further reduction in the number of plans and it dropped down to 52,761 in 2004.

An EPF provides a part of social security pension for employees in private sector as well as additional benefits sponsored by employers. The governmental portion had been good resources of asset gains before the burst bubble, however, after that, it became the most significant source of asset losses. The number of EPF, which was 1,883 in 1996, gradually decreased to 1,801 in 2000. Since DBCPA allowed plan sponsors of EPF to return the assets and obligations of the governmental portion to the government in 2003, many companies sponsoring EPF have returned the governmental portion to the government and converted their EPF to the new Defined Benefit Corporate Pension Plans (DBCP) under DBCPA. As of September 30, 2005, 731 EPF were converted into DBCP and only 718 EPF is existing.

Since the enforcement of DCPA, 1,566 DC plans were approved by the government. If an employer wants to close all or a part of its existing DB plan and set up a DC plan, DCPA allows the employer to transfer the assets of its existing DB plans and distribute them among the individual accounts of the DC plans. The employer can settle the accrued benefit obligation corresponding to the transferred assets due to this deal. To employers suffering from great burden of recognition of retirement benefit obligations under the new accounting standard, this feature of the Japanese DC plans can be a welcome relief.

For 900 DC plans of 1,566, the assets were transferred from DB plans. Due to the negative features of DCPA, such that withdrawal of the assets is not allowed until age of 60, the tax ceiling of the contributions is low and no employees contributions are allowed, many companies are now hesitating to convert their DB plans to DC plans. On the contrary, even though the current DC plan has such features, 1,566 plans have been introduced. If these negative features will be improved in future, there might be explosion of the number of DC plans.

According to the news release many individual investors have recently started stock trading. The fact that Japanese are not familiar with investments in general is one of the issues when a company wants to introduce a DC plan. Such a boom in stock trading may remove fetters for DC plans.

There is little doubt about steady growth of DC plans in Japan over the coming decade.

2. Typical plan design of corporate pension plan in Japan

Before the development of TQPP and EPF, Retirement Allowance Plans (RAP) was common mainly among large companies. A RAP provides only lump-sum benefits and is financed by a book reserve. A typical RAP has a final salary related formula such that the lump-sum is equal to the pensionable pay at the resignation times the multiple determined by years of service and by the reason of the resignation. It has usually two schedules in its benefit formula, i.e. for voluntary termination and involuntary termination/retirement. The benefit curves for voluntary and involuntary termination converge after certain years of service in many cases, while some plans have benefit curves that never converge.

The following charts show the examples of benefit curves.

Sample 1: Two curves converge after certain years of service



Years of Service

Sample 2: Involuntary curve is higher than voluntary curve for all years of service



Years of Service

Sample 3: Two curves almost converge into one at the certain years of service but spreads after that.



Years of Service

After the introduction of TQPP and EPF, corporate pension plans in Japan have developed based on the existing RAP. The RAP is a basic promise for retirement benefits and a TQPP or an EPF is used as a funding vehicle of the RAP.

The regulations for TQPP require that a TQPP provides annuity benefits, but not require life annuities. It is one of specific features of TQPP that many TQPP provide only certain annuities. Another main characteristic is that most of TQPP provide lump-sum benefit options. In parctice, the main benefit of TQPP is a lump-sum benefit and an annuity benefit, which is actuarially equal to the lump-sum benefit, is an option.

In the case of EPF, all EPF are required to provide life annuities. In order to accomplish the basic promise of RAP, many EPF provide life annuity with guaranteed period, the amount of which is determined so that the present value of the benefits for the guaranteed period is equal to the lump-sum benefit prescribed in the underlying RAP rule.



Life Annuity with Guarantee Period



When one designs a TQPP or an EPF, it is necessary to convert lump-sum benefits into annuity benefits. A typical discount rate for the design purpose had been 5.5% for a long time, because the discount rate for funding valuations had been fixed at 5.5% for EPF and between 5% and 6% for TQPP due to the regulations. Even after the regulation of the discount rates was relaxed in 1997, many companies have continuously used the high discount rate of 5.5% for the design purpose, since lowering the discount rate for conversion makes cut in annuity benefits.

Summarizing typical pension plan design in Japan;

- The main benefit is a lump sum benefit.
- An annuity benefit option is available.
- The amount of the annuity benefits is determined so that the present value of the benefit for the guarantee period is equal to the lump sum benefit.

3. Accounting for Japanese Pension Plans

In Japan, the accounting standards for retirement benefit plans became effective on April 1, 2000, which intends to go along with IAS 19. The accounting standards for the special event, such as curtailment, termination, settlement and converting of retirement benefit plans, became effective on January 31, 2002. The projected unit credit actuarial method is used in the standard to calculate the liabilities and costs as in IAS19.

Before these standards, there had been no disclosure requirements for funded plans. Regarding to unfunded plans, many companies had fully/partly booked "Walk-Away Benefit Obligations (WABO)" as a reserve for their retirement allowance plans, which were calculated as if all the employees resigned voluntarily as of the measurement date. Since the tax code at the time allowed tax free reserve up to 40% of the WABO, many companies booked 40% of the WABO.

Under the new standard, the projected benefit obligation (PBO) is a liability at the balance sheet date. This includes estimates of future increases to salaries and discounts from expected resignation to the present. In my opinion, for Japanese plans, the PBO is not the most suitable framework for the retirement benefit obligations. Why do the obligations include estimates of future increases to salaries? Why are the obligations determined as the present values of future benefits, where the present benefits are definitely defined at the measurement date? The Business Accounting Council did not answer these questions properly when it issued the opinion about the accounting of retirement benefit plans.

For example, many Japanese actuaries experience that PBO is less than WABO.

The following table shows the PBO and WABO for Sample 1 mentioned above, assuming that the discount rate is 2.5%, the salary increase is 2%, entry age is 30 and retirement age is 60. For first 18 years, PBO that reflects higher benefit curve for involuntary resignation is higher than WABO. However, the difference becomes smaller as two benefit

curves converge into one. After 18 years, WABO is larger than PBO.

It is natural because we assume the discount rate is higher than salary increase and there are no annuity benefits. Assumption setting like this is common. In order to include estimates of future increase in salary where no obligation exist, the company is allowed not to fully recognize the existing present obligation for walk-away benefits. The accounting should recognize what has been promised, not what may occur in the future.

	Years	Benefit	Formula	Pansionabla		Pro	jected Unit Ci	Walk-Away Benefit		
Age	Service	Involuntary	Voluntary	Salary	Benefit	PBO	NC	ABO	WAB	NC
30	0	0	0	400		0	327	0	0	240
31	1	2.00000	0.60000	408	245	340	170	237	245	122
32	2	3.00000	0.90000	416	375	530	177	371	375	125
33	3	4.00000	1.20000	424	509	736	335	518	509	340
34	4	5.00000	2.00000	433	866	1,109	404	804	866	433
35	5	6.00000	3.00000	442	1,325	1,563	346	1,157	1,325	344
36	6	7.00000	3.78000	450	1,703	1,970	379	1,473	1,703	387
37	7	8.00000	4.64000	459	2,132	2,421	474	1,829	2,132	487
38	8	9.20000	5.70000	469	2,671	2,983	536	2,274	2,671	562
39	9	10.46000	6.90000	478	3,298	3,623	608	2,789	3,298	650
40	10	11.80000	8.26000	488	4,028	4,352	632	3,382	4,028	668
41	11	13.19000	9.63000	497	4,789	5,125	670	4,018	4,789	721
42	12	14.58000	11.08000	507	5,621	5,955	710	4,711	5,621	781
43	13	15.97000	12.62000	517	6,530	6,847	748	5,467	6,530	838
44	14	17.36000	14.24000	528	7,516	7,798	784	6,285	7,516	897
45	15	18.75000	15.94000	538	8,581	8,807	851	7,168	8,581	991
46	16	20.20000	17.78000	549	9,763	9,906	887	8,144	9,763	1,054
47	17	21.65000	19.70000	560	11,034	11,062	924	9,190	11,034	1,126
48	18	23.10000	21.71000	571	12,403	12,278	959	10,310	12,403	1,200
49	19	24.55000	23.81000	583	13,875	13,550	993	11,507	13,875	1,276
50	20	26.00000	26.00000	594	15,454	14,876	893	12,780	15,454	927
51	21	27.56000	27.56000	606	16,709	16,131	913	14,018	16,709	946
52	22	29.12000	29.12000	618	18,008	17,440	934	15,341	18,008	965
53	23	30.68000	30.68000	631	19,352	18,804	956	16,757	19,352	984
54	24	32.24000	32.24000	643	20,742	20,226	979	18,274	20,742	1,004
55	25	33.80000	33.80000	656	22,181	21,708	1,073	19,902	22,181	1,096
56	26	35.47000	35.47000	669	23,742	23,326	1,098	21,720	23,742	1,118
57	27	37.14000	37.14000	683	25,358	25,015	1,125	23,677	25,358	1,140
58	28	38.81000	38.81000	696	27,028	26,778	1,152	25,789	27,028	1,163
59	29	40.48000	40.48000	710	28,754	28,618	1,181	28,071	28,754	1,186
60	30	42.15000	42.15000	725	30,540	30,540	0	30,540	30,540	

*) NC for WABO is increment of the benefit in the year assuming no salary increase.

I would like to suggest to use WABO as liabilities at the balance sheet date for lump-sum base plan like most of Japanese plans. Under this framework, companies do not experience volatility of liabilities caused by fluctuation of bond markets. In the Profit and Loss account (P&L) NC in terms of WABO and increment of WABO by expected salary increase should be charged. Please note that an interest INCOME is born from WABO when someone does not resign in the year, because lump-sum benefits are never revalued by discount rate as time passes unlike in the case that annuity benefits should always be revalued by a discount rate with the passage of time.

There are several technical issues we have to overcome in the WABO framework. The biggest one is the fact that there are two benefit curves in many Japanese plans. For voluntary resignation, the benefits are calculated based on the voluntary benefit table, and for normal retirement, the benefits are calculated based on the involuntary benefit table. (Please see the chart for Sample 2 above)

Here, I would like to suggest modifying WABO. I define the Modified WABO (WABO_M) such that;

$WABO_M = WABO + (IVBC(t) - VBC(t)) \times S(t) \times P(t),$

where

VBC(t): Voluntary Benefit Coefficient at time t;

IVBC(t): Involuntary Benefit Coefficient at time t;

S(t): Pensionable Salary at time t; and

P(t): Provability to reach normal retirement at time t.

The normal cost for WABO_M is defined such that;

 $NC(WABO_M) = (VBC(t+1) - VBC(t)) \times S(t)$

+ (IVBC(t+1) - VBC(t+1) - (IVBC(t) - VBC(t))) x S(t) x P(t),

The following table is an illustration of the modified WABO taking Sample 2 as an example.

	Years	Benefit Formula		Danaianahla		Projected Unit Credit			Walk-Away Benefit		WAB Modified	
Age	Service	Involuntary	Voluntary	Salary	Benefit	РВО	NC	ABO	WAB	NC	WAB_M	NC
30	0	0	0	400		0	223	0	0	0	0	216
31	1	1.00000	0.00000	408	0	230	230	168	0	0	221	221
32	2	2.00000	0.00000	416	0	474	237	347	0	624	452	226
33	3	3.00000	1.50000	424	637	733	244	538	637	212	695	232
34	4	4.00000	2.00000	433	866	1,009	404	744	866	433	950	454
35	5	5.00000	3.00000	442	1,325	1,455	291	1,091	1,325	265	1,437	287
36	6	6.00000	3.60000	450	1,622	1,798	300	1,354	1,622	270	1,766	294
37	7	7.00000	4.20000	459	1,930	2,161	309	1,636	1,930	276	2,111	302
38	8	8.00000	4.80000	469	2,250	2,546	318	1,938	2,250	281	2,472	309
39	9	9.00000	5.40000	478	2,581	2,955	631	2,261	2,581	765	2,850	795
40	10	10.00000	7.00000	488	3,413	3,688	385	2,866	3,413	341	3,734	373
41	11	11.10000	7.70000	497	3,830	4,192	397	3,278	3,830	348	4,208	383
42	12	12.20000	8.40000	507	4,261	4,726	409	3,720	4,261	355	4,705	392
43	13	13.30000	9.10000	517	4,709	5,293	422	4,196	4,709	362	5,224	402
44	14	14.40000	9.80000	528	5,172	5,893	865	4,709	5,172	1,161	5,769	1,204
45	15	15.50000	12.00000	538	6,460	6,951	637	5,635	6,460	646	7,146	692
46	16	16.80000	13.20000	549	7,248	7,805	653	6,388	7,248	659	8,034	708
47	17	18.10000	14.40000	560	8,065	8,700	669	7,192	8,065	672	8,961	725
48	18	19.40000	15.60000	571	8,912	9,638	685	8,052	8,912	686	9,931	742
49	19	20.70000	16.80000	583	9,790	10,622	948	8,972	9,790	1,282	10,944	1,343
50	20	22.00000	19.00000	594	11,293	11,887	812	10,173	11,293	773	12,598	838
51	21	23.50000	20.30000	606	12,307	13,052	834	11,305	12,307	788	13,778	858
52	22	25.00000	21.60000	618	13,357	14,278	857	12,524	13,357	804	15,012	879
53	23	26.50000	22.90000	631	14,444	15,568	882	13,842	14,444	820	16,302	901
54	24	28.00000	24.20000	643	15,570	16,927	907	15,266	15,570	836	17,651	923
55	25	29.50000	25.50000	656	16,734	18,359	1,112	16,810	16,734	984	19,062	1,077
56	26	31.30000	27.00000	669	18,073	20,055	1,147	18,657	18,073	1,004	20,672	1,104
57	27	33.10000	28.50000	683	19,459	21,849	1,183	20,670	19,459	1,024	22,356	1,131
58	28	34.90000	30.00000	696	20,892	23,749	1,222	22,866	20,892	1,045	24,119	1,160
59	29	36.70000	31.50000	710	22,376	25,761	1,262	25,267	22,376	1,066	25,963	1,189
60	30	38.50000	33.00000	725	27,895	27,895	0	27,895	23,910		27,895	

In this case, the involuntary base benefit are always higher than voluntary base benefits, therefore WABO cannot cover a benefit at the normal retirement. Using WABO as liabilities at the balance sheet date is to understate the obligations of the plan. WABO_M is larger than WABO reflecting the difference between two benefit curves. It has still a good feature that there are no volatility caused by the discount rate assumptions.

Another technical issue is the valuation of the annuity benefits that are provided as an option for lump-sum benefits. I believe that this is not insurmountable problem, especially when a company uses a new design for annuity benefits.

The DBCPA allows companies to revalue the annuity benefits according to the updated discount rate assumptions for conversion of lump-sum benefits to annuity benefits, even after the payment of annuity starts. This means that companies can keep the difference between the present value of the annuity benefits and the value of the underlying lump-sum benefits small. In this case, the issue of the annuity valuations is not so material. We have to take care of only the benefits after the guarantee period when we value the obligations.



The use of WABO should reduce the scope for variations in actuarial assumptions and further transparency of pension costs, and overall reported profits, for investors. The WABO is arguably also appropriate for pension plan reporting to the members.

4. Can we keep employers in the DB world in Japan?

One of the driving forces of the development of the DC plans in Japan is the volatility of the liabilities of the DB plans. If the liabilities are less volatile, I believe that many big companies will continue to keep their DB plans. In order to keep employers in the DB world in Japan, there are two prerequisites.

1) The liabilities are measured based on WABO_M.

2) There are ways to resolve or settle the obligations for annuity payment.

The first condition was discussed in the previous chapter. WABO_M includes only withdrawal assumptions before retirement, hence the volatility of the liabilities is small. Salary increase and the return on assets affect on the costs in terms of WABO_M. The companies can control salary increase and reduce the down side risk of the investment return by managing the assets properly.

Regarding to the second condition, longevity risk related to annuity payment is beyond the control of a company. I think that the responsibility of a company for retirement benefit plans is to provide the necessary resources for retirement income at one's resignation, but not to continue to pay retirement income after one's retirement. The company should get relief from the responsibility of annuity payments for retirees.

As I discussed in my paper for PBSS 2004 in Sydney, a plan with a "lump-sum based formula" can provide "age-free" benefits. Japanese society will face, or is already facing, an ageing population. Employers have to prepare for a future decline in the labor force and an ageing of the labor force. They may have to change their HR strategy in order to retain older workers. Traditional Japanese retirement benefit plans, which typically have a "lump-sum based formula", have good features in principle for the retention of older workers.

A cash-balance type plan, which is allowed by the DBPCA, could be a solution for employers who want to retain older workers. A CB type plan does not conflict with a salary system based on a "pay-for-performance" or "pay-for-job" concept, which is popular among Japanese companies. Furthermore, in the case of a CB type plan, you can properly mange the investment risk easier than for other type of the plan.

There is no question as to the importance of the defined benefit plans for retirement income security. We have to make best efforts to convince employers to keep the DB plans.

I believe that the key words to accomplish this task are;

- The "Modified Walk Away Benefit Obligations" framework for accounting, and
- A cash-balance type plan.

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