

## Struggling of Japanese corporate pension plan with the low interest rate environment

Takashi Kato<sup>1</sup>

### Abstract:

Most plan sponsors in developed countries are seeking ways to maintain a sustainable corporate pension system against recent low interest rate environment. Japan is the first runner of such a challenging arena. The 10-year government bond interest rate in Japan has been below 2.0% since the beginning of 21 century, and recently it is around 0.4%. Past 15 years (1999-2014) return from Japanese equity (referring Tokyo Stock Price Index, a representative benchmark of Japanese equity) is just around 0.5% p.a. It has resulted for lots of defined benefit pension plan in failure to meet its original investment return target. In addition, the low interest rate environment caused higher pension liability due to low discount rate assumption. Therefore many plan sponsors had likely faced to difficulties to maintain its original defined benefit program. The objective of this paper is to review how Japanese corporate pension plan had struggled against such a backdraft. The case studies are threefold including,

1. Plan amendment with benefit reduction- Implementation of a hybrid plan with a combination of Defined Contribution plan and Cash Balance plan
2. DB pension risk transfer through pension buy-out – State benefits part
3. Diversification of its strategic asset allocation – Not only to four traditional asset classes of domestic equity, domestic bond, foreign equity and foreign bond, but also hedge funds and other risk managed products

The regulation for corporate pension plans in a certain country is thought to be highly dependent on their social, economic or financial situation. However globalization of economic and pension related issues has developed so far. Therefore the author believes it would be the thoughtful case study for plan sponsors in other low interest rate countries.

<sup>1</sup> Institution of Actuaries of Japan (IAJ) and The Japanese Society of Certified Pension Actuaries (JSCPA)  
1-4-6, Hon-Machi, Shibuya-ku, Tokyo 163-1437 Japan  
takashi.kato@mercer.com

## 1. Introduction

The history of Japanese corporate pension plan started in 1962 and significant amendment was implemented in 2002. This paper will review the history of Japanese corporate pension plans development for fifty years as the following order with the reference to “Basic material about Corporate Pension 2014”.

1. Establishment of Tax Qualified Pension Plan and Employer Pension Fund
2. Environmental changes and diversification of Investment strategy
3. Implementation of Defined Benefit Corporate Pension and Defined Contribution Corporate Pension

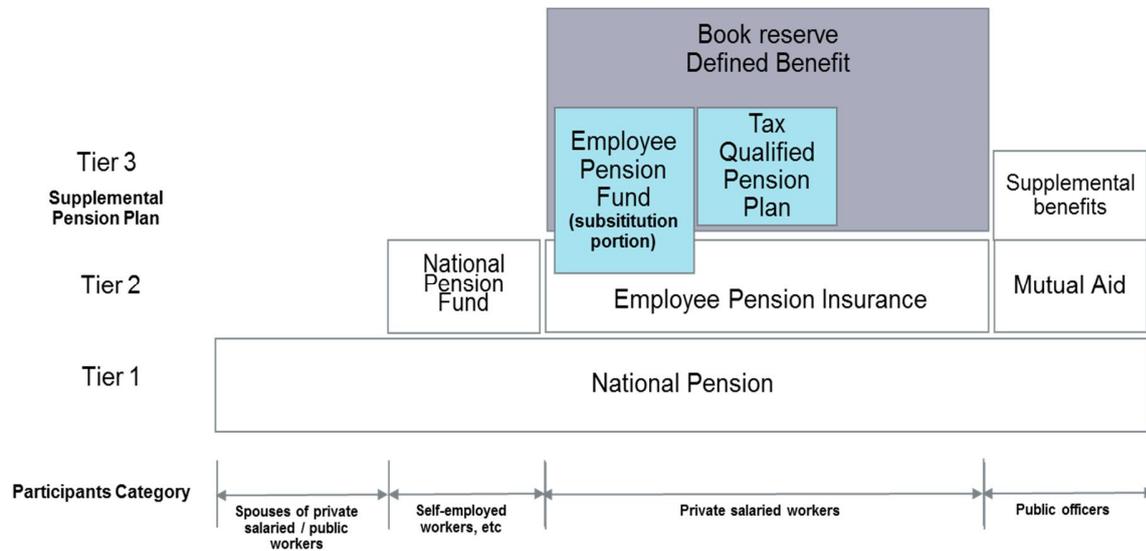
After that, the paper will describe how Japanese plan sponsors have struggled against the environment including following actions.

1. Plan amendment with benefit reduction
2. Defined Benefit risk transfer from Employee Pension Fund
3. Investment approach for Defined Benefit pension plans

Lastly I would like to summarize the author’s view of corporate pension plan management.

## 2. Establishment of Tax Qualified Pension Plan and Employer Pension Fund

Retirement benefit provided by the employer is not mandatory in Japan but around 90% of companies provide the voluntary retirement benefit, which is lump sum oriented arrangement. By the strong demand that employers wish to normalize the cash outflow, an external funding arrangement, named Tax Qualified Pension Plan, which gives tax benefit becomes available as of 1962. On the other hand, government considered improvement of post-retirement income program in addition to state benefit. In 1966, Employer Pension Fund, which covers a certain portion of state benefit and the plan unique additional benefits, also became available and many Japanese companies implemented these funded defined benefit pension scheme.



Although the risk free rate, say 10 year government bond yield, had been enough high, target investment return which is used to discount its funding liability was fixed as flat 5.5%. 5.5% was also applied as a conversion factor from lump sum to annuity pension payment.

(Example of pension conversion from lump sum value)

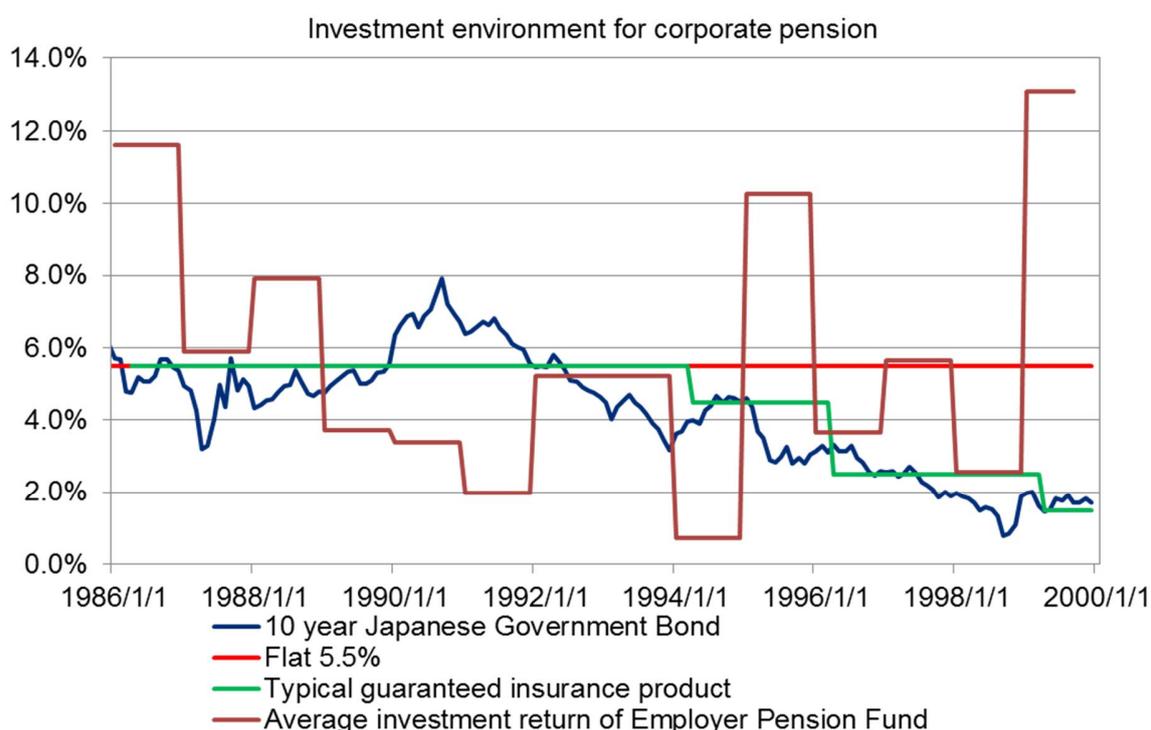
Pension annuity value (1,300; 10 year certain annuity)

= Lump sum value upon retirement (10,000) /  $\ddot{a}_{n=10}^{i=5.5\%}$  (7.691)

Therefore beneficiaries could enjoy very rich retirement benefits whereas the plan sponsor took neither any additional cost nor investment risk. In fact, the average of investment return for the corporate pension plans during 1972-1986 was in the range of 8.0%-10.0% which is mainly from stable assets. The investment strategy had been regulated by 5:3:3:2-control, which require 50%+ in guaranteed or stable assets such as domestic bonds, -30% domestic equities, -30% foreign bonds and equities and -20% properties so majority of asset allocation was in guaranteed products. The assets must be managed by Trust bank or Life insurance companies so there are no investment specialized player such as asset management companies.

### 3. Environmental changes and diversification of Investment strategy

Since the beginning of 1990s, actual investment return on Employee Pension Fund tended to fail to meet the 5.5% of target investment return. Further, 10 year government bond yield and guaranteed interest rate secured by major insurance companies had also declined. It resulted that employers were not able to take free-lunch but required to consider pension plan management.



Then government started deregulation to corporate pension plan. In 1990, asset management companies are allowed to cut into the pension investment market in Japan. In 1996, 5:3:3:2-control was repealed. In 1997, target investment return can be set based on actual asset allocation and/or circumstances of each pension fund. There was a significant change to evaluate funding liability under state benefit portion. Previously it was evaluated based on following formula.

Until 30 September 1999

Funding liability

= Present value of future benefit payments – present value of future expected contribution, discount rate is 5.5% and each term is measured as of the valuation date

Since 1 October 1999

Funding liability at 3/31/N+1

= Funding liability at 3/31/N + Net cash-in on the state benefit + % of actual investment return of national pension insurance \* average annual balance of funding liability

The big difference of definition represents funding liability on state benefit is no longer present value of accrued benefit but a borrowing from government with a duty to achieve the same investment performance as national pension insurance.

The measurement methodology of plan assets is changed in 1998. It had been measured as book value but since 1998, it must be replaced by the market value of each asset, to reflect the latest fair value.

Lastly, local accounting standard was amended in 2000. Previously the pension liability was calculated based on termination benefit as of the valuation date. However listed companies in Japan are required to evaluate using Projected Unit Credit actuarial cost method. Due to low interest rate and seniority based back-loaded plan design, lots of companies needed to accept significant increase of pension liability at that timing.

After the changes, initially allocation to risky assets such as equities and foreign securities were increased to maintain 5.5% of original investment return target. However a lot of companies started considering about de-risking on defined benefit pension scheme so the target investment return was getting lower and lower. Once the de-risking became a theme on corporate pension plan management, it does not only mean reduction of investment risk but also includes defined benefit risk and balance sheet risk.

#### 4. Establishment of Defined Benefit Corporate Pension and Defined Contribution Corporate Pension

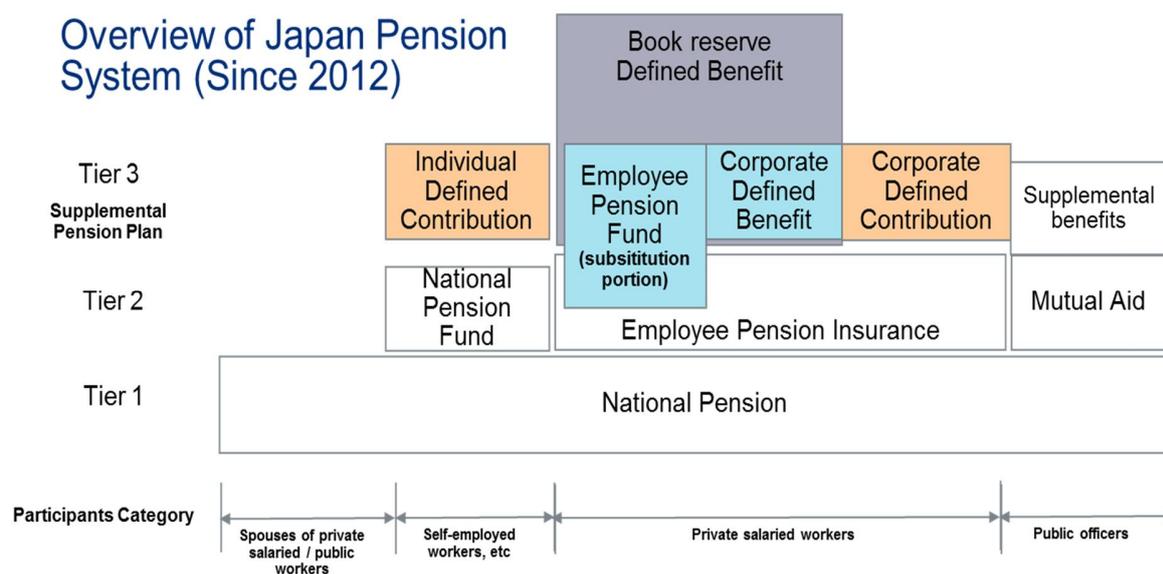
Because of economic stagflation and poor investment performance, it was already difficult for employers to provide original benefit level of retirement pension annuity. Funded status was also getting lower particularly on Tax Qualified Pension Plan which does not require any funding ratio monitoring. Since there was no safety net for the Tax Qualified Pension Plan to secure the accrued benefits upon bankruptcy of the employer, some employees had to give up the

retirement benefits right after they lost job. Therefore government determined to abolish the Tax Qualified Pension Plan scheme and offer a different funded arrangement which require annual funding review.

There was a different argument on Employee Pension Fund. As state benefits are designed as defined benefit with lifetime annuity payment, the plan sponsor must take not only investment risk but also longevity risk to manage the Employee Pension Fund. Therefore there were strong requests, by sizable employers which operate its Employee Pension Fund, they would like to return the state benefits portion on the pension plan.

Plan design was also argued to eliminate defined benefit risk from employers. In Japan, final salary linked defined benefit arrangement was very popular and state benefit is designed as career average salary linked defined benefit scheme. However defined contribution scheme and a hybrid type arrangement, with a Cash Balance plan, are requested from plan sponsors.

Based on these arguments, Defined Contribution Corporate Pension plan became available since 2001. Defined Benefit Corporate Pension plan became a successor scheme of Tax Qualified Pension Plan and Employee Pension Fund. Existing Tax Qualified Pension Plan was required to terminate the arrangement until 3/31/2012. Under the Defined Benefit Corporate Pension, plan sponsors are able to offer Cash Balance arrangement.



The new pension system and regulation to restructure the corporate pension had been revealed. So I would like to review how Japanese plan sponsors had faced these changes and have struggled the low interest rate environment.

## 5. Plan amendment with benefit reduction

Traditional Japanese retirement benefit is designed as the final salary multiplied by a rate based on year of service. Generally the multiplier is seniority based and progressively increases in longer service period. The reason of termination is also a significant factor and usually voluntary termination has to take a penalty for retirement benefits.

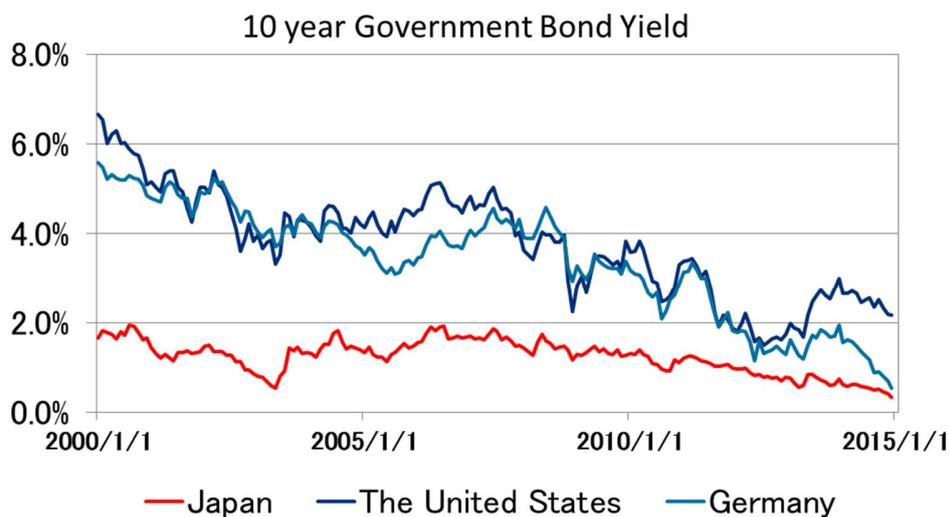
(Example of multipliers)

Years of Service	Multiplier	
	Voluntary termination	Others
5	2.5	5
10	5	10
15	10	18
20	20	30
25	30	40
30	40	50

However, in addition to HR policy trend such as pay-for-performance and equal compensation, employers considered the transition from the seniority based high defined benefit risk arrangement to a career accumulated type program. Furthermore, plan sponsors seriously wished to set a fair pension conversion rate, not fixed 5.5% but reasonable level referring to economic condition conservatively. Actually many companies had struggled with too much pension liability due to the guaranteed pension conversion rate. Defined Contribution plan can be one of the most desirable options for employers.

(Typical plan amendment)

	Old plan	New plan (Hybrid plan)	
		Defined Contribution (25%)	Cash Balance (75%)
Benefit formula	Final salary (100%)	Defined Contribution (25%)	Cash Balance (75%)
Benefit level	20,000,000 JPY with 30 year-of-service	Equivalent to old plan lump sum value at normal retirement age with "model employee"	
Annual Pay Credit	Not applicable	2% of annual salary	6% of annual salary
Interest Credit	Not applicable	2% per annum (assumption)	Refer 10 year Japanese Government Bond
Annuity type	Life time annuity with 10 year guaranteed	Not applicable	10 year certain
Annuity conversion rate	5.5%	Not applicable	Refer 10 year Japanese Government Bond



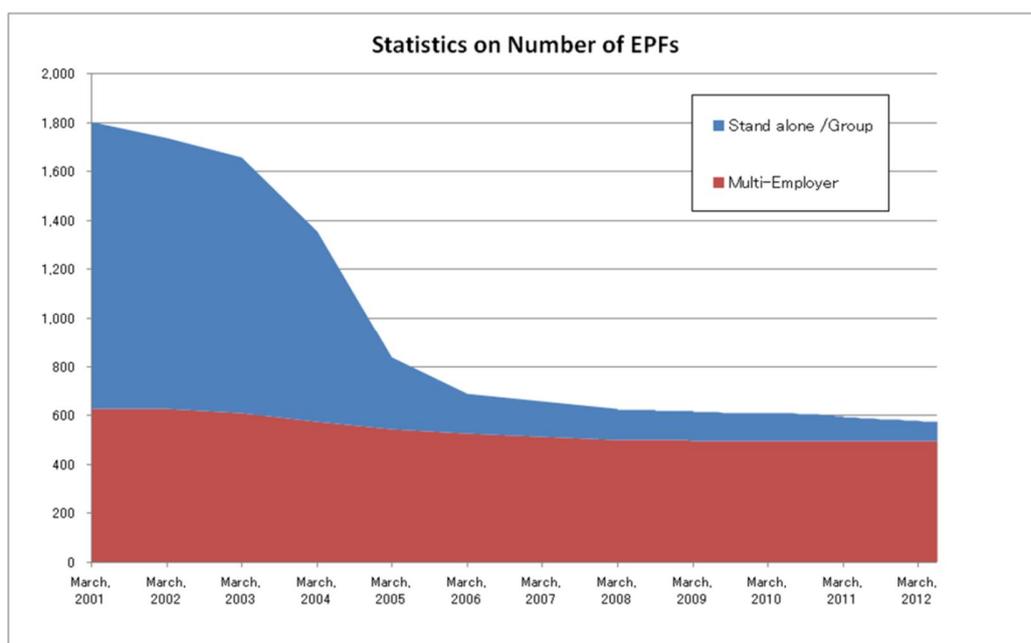
But there is a big obstacle to implement the change. These changes tend to result benefit reduction but no amendment is introduced in Japan unless employers obtain consent by at least two-third of employees.

Although 10 year government bond yield has been much less than 5.5%, Japanese employees tend to accept the annuity conversion rate and annuity type changes. One of the reasons is that many people elect lump sum payment historically so the change does not mean benefit reduction for them virtually. In addition, it is because employees understand the rationale that 5.5% was a long term stable investment return assumption so they believed that they need to accept the reasonable range of investment risk, in order to avoid too much financial risk for employers. Employees prefer sustainable pension plan rather than greater benefit with too much risk.

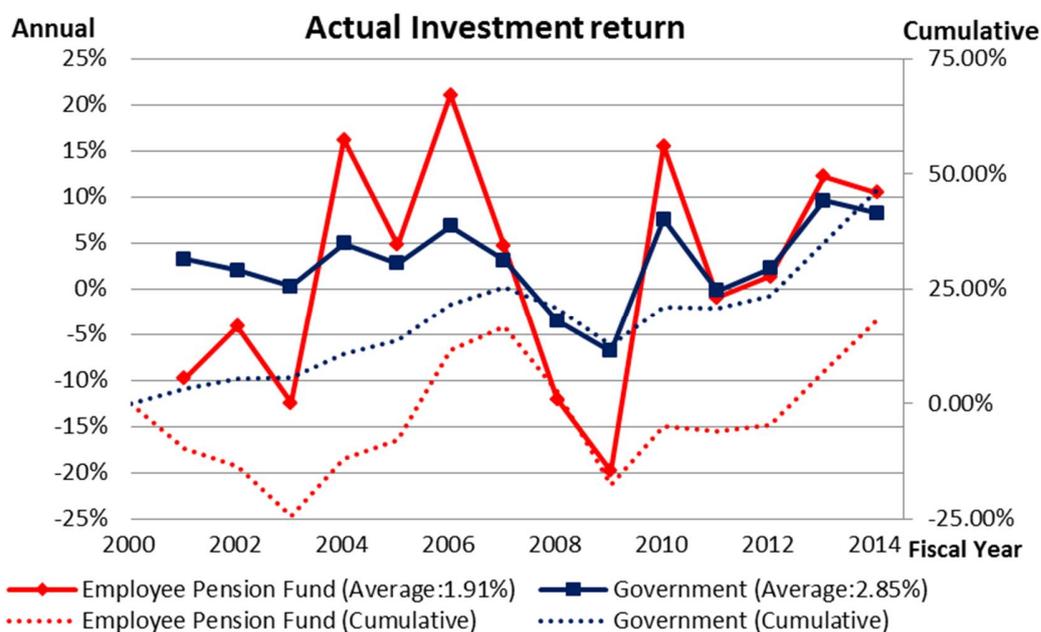
However Japanese employees are very resistant to Defined Contribution plan adoption, because they 1) culturally prefer defined benefit lump sum benefits, 2) are unfamiliar with the schemes 3) are uncomfortable with taking on investment risks and 4) suspect a defined contribution plan will provide lower benefits at equivalent contribution rates. Therefore conservative assumption setting such as expected return on defined contribution plan assets, which could be very low, and effective communication are essential. For example Toyota Motors, the biggest car manufacturing company in Japan, set expected investment return on defined contribution plan as zero perhaps but so that they obtain employee consent smoother.

## 6. Defined Benefit risk transfer from Employee Pension Fund

It is currently a popular solution in the United Kingdom and the United States but there was a very strong trend of pension buy-out in Japan during early 2000s. There are no acceptances of supplemental benefit part but Japan government is the only player who accepts the pension liability of state benefit part since 2003. The background was described in the section 3 but the other big incentive was that buy-out price of state benefit was very likely much smaller than the same part of the accounting liability of the Defined Benefit Obligation. As the funding liability of state benefit represents a borrowing from government, the buy-out price is exactly same as funding liability. However the major players of buy-out seller are stand-alone pension fund and group company pension fund, which is likely able to make a decision even such a significant change.



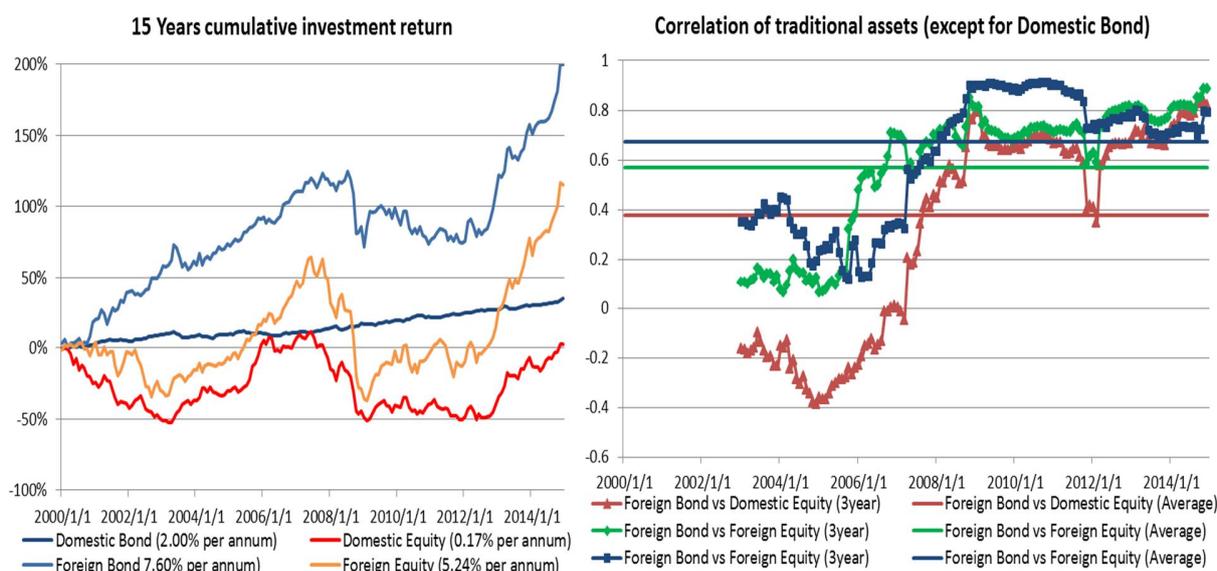
Other Employee Pension Fund, mainly Multi-Employer plans, have to aim investment return at least same as government fund. Actually majority of Multi-Employer plans faced a certain shortfall even against state benefit liability, that is why they could not take buy-out option, their target investment return tend to be higher than government in order to avoid forcing their plan sponsors to cover unfunded pension obligations, a growing number of pension funds are turning to high risk-return investments including hedge funds. Therefore actual investment return has been historically more volatile than the required investment return by government.



Historical investment performance represents that Employee Pension Funds have been likely increased its shortfall. Further, "AIJ scandal", in which around 200 billion Japanese yen assets under management of AIJ Investment Advisors Co., (a local independent asset management company in Japan) was believed to have been lost due to fraud, came out in the open. Many Employer Pension Funds were drawn to the high returns performance record that AIJ Investment Advisors claimed to have achieved because of the sluggish investment environment in Japan. That scandal revealed the lack of governance power with multi-employer Employee Pension Funds and difficulties to meet funding requirement for state benefits. Therefore on 19 June 2013, the Diet passed an amendment to the Employee Pension Fund law which is implemented as of 1 April 2014. The main points of the amendment are 1) No new Employee Pension Fund, 2) 5-year easement window of winding-up for "severely under-funded Employer Pension Funds, 3) The Minister can give a dissolution order to "slightly under-funded Employer Pension Funds", 4) Transition measures are provided for supplemental benefit portion. Therefore majority of existing Employer Pension Funds would take risk transfer action.

## 7. Investment approach for Defined Benefit pension plans

The Japanese investment environment since 2000 was one of the most difficult situations in the world. Equity investment could not make risk premium against investment in bond. If we focus on spots at financial crisis (2008-2009), correlation in traditional assets was much higher than usual so diversification within four traditional asset classes (domestic and foreign equity and bond) could not work what plan sponsors initially expected.



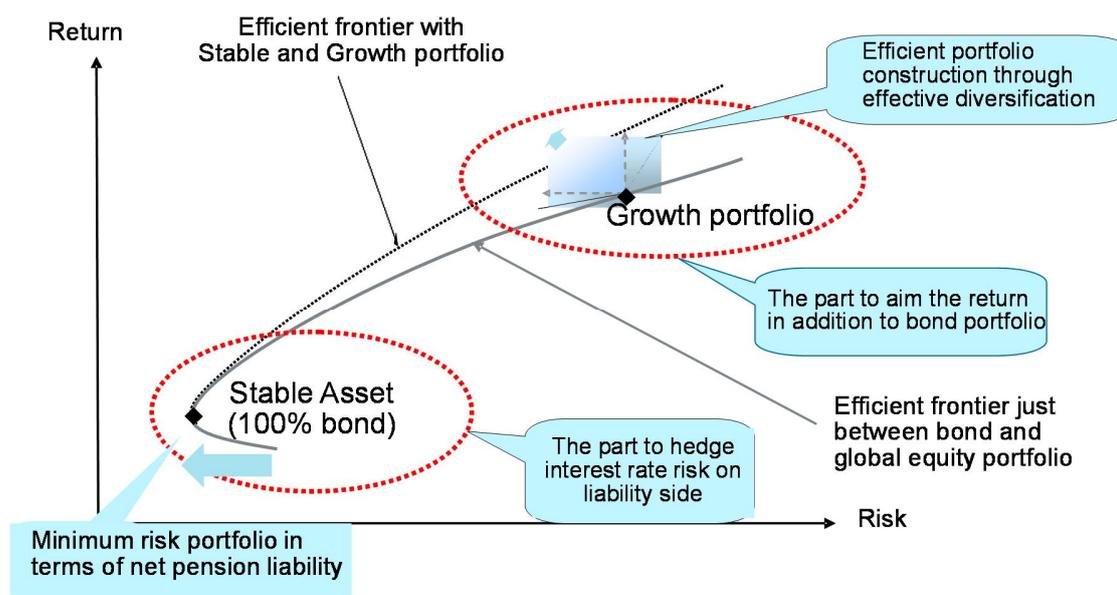
The lesson from the experience, particularly at financial crisis in 2008, plan sponsors started re-reviewing of construction of its strategic asset allocation. Some plan sponsors simply divide “Stable Assets” which is mainly domestic bond and “Growth Assets” which contains global equity, high yield and emerging market bond, real assets, hedge funds, illiquidity assets and other risk premiums. The rationale is not to expect much variance effect between Stable and Growth Assets but to simplify the budgeting of pension risk.

Referring the net liability in terms of accounting valuation, domestic and high-quality bond portfolio would be the primary choice as it would be the minimum risk assets. The reason why plan sponsors need to hire Growth Assets is to clear its target investment return and constraint on contribution to the plan. Starting point can be 100% domestic bond to match future benefit payments. However many plan sponsors allocate 20-30% in Growth Assets to aim 2.5-3.0% stable investment return on plan assets.

Once plan sponsor determines allocation of Growth Assets, the next step would be the diversification study in the section in order to allocate the risk within the Stable Assets and

Growth Assets (Main Asset Class). Domestic and Foreign equity would be a primary choice but other categories such as absolute return funds or unconstrained bond, which do not have benchmark for portfolio construction to seek opportunity of gaining income, could be in this category.

Image of portfolio construction

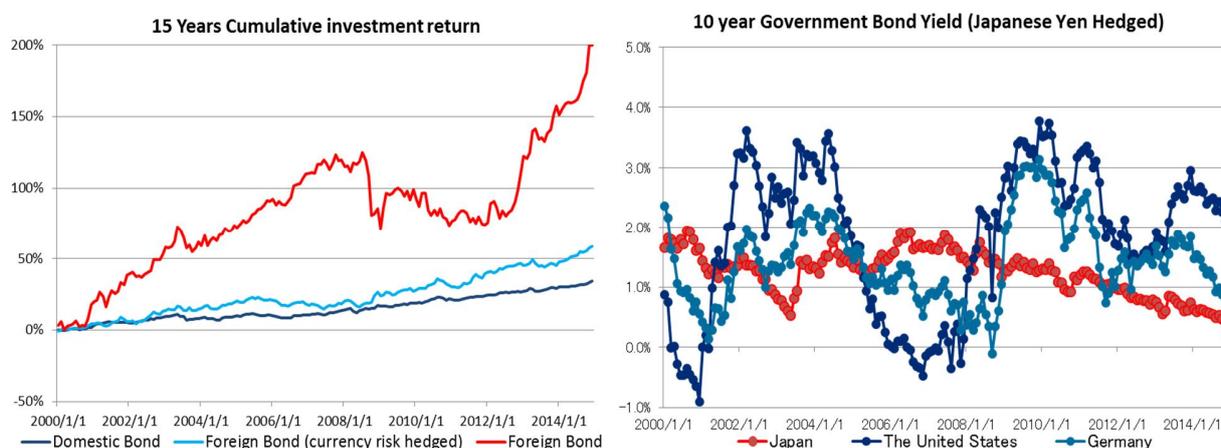


Sample of asset allocation

Main Asset Class (for risk budgeting)		Sub Asset Class (for risk allocation)	
Stable Assets	70%	Domestic bond	35%
		Foreign bond (currency risk hedged)	25%
		Principal guaranteed Insurance Product	10%
Growth Assets	30%	Domestic equity	10%
		Foreign equity (developed countries)	10%
		Emerging market equity	5%
		Opportunistic assets (private assets, high-yield bond, insurance linked product)	5%

Although the majority of plan assets should be Stable Assets, it does not simply mean investment in domestic government bond funds. Plan sponsors might be able to accept stable cash income with poor performance but many listed companies also think about absolute return level, because the Expected Return On Assets directly affects to its expense under

Statement of Financial Accounting Standards (in the United States) and Japan Generally Accepted Accounting Principles. One of the opportunities in Japan had been foreign bond with currency risk hedging. The simple foreign bond product cannot be regarded as Stable Assets because of the high volatility of the performance. However majority of the risk profile came from currency exposure. On the other hand, currency risk hedged foreign bond had historically generated stable returns and plan sponsors found that there have been opportunities that foreign bond with currency risk hedging overs domestic bond performance. The opportunity has continued since 2009 and it is simply because many developed countries dropped its short term interest rate but long term interest rate was still enough higher than Japanese bond. It resulted to very low currency hedge cost so many corporate pension plans have allocation to foreign bond with currency risk hedging instead of simply allocate to domestic bond.



Generally the Main Asset Class is reviewed once every 3-5 years at the same timing of contribution schedule review. However Sub Asset Class can be tactically changed reflecting recent short term view of economic environment.

## 8. Author's view

Many Japanese companies have experienced defined benefit pension de-risking activities at both plan design and investment strategy. However with the consideration of views from investors and sell side analysts, listed companies still seek opportunities for de-risking. Actual investment performance linked cash balance plan becomes available recently, although there are still a lot of administrative issues. Corrective defined contribution plan is also in the argument. These plans would be de-risking on the surface for employer point of view but it can be just a risk-transfer from employer to employees so it may not be an easy task for plan sponsors. Currently investment related decision making for defined benefit pension plan is done by plan sponsor side mainly but if the actual investment return affects directly to retirement benefits, governance power must be higher than as it is, involving plan participants and beneficiaries. In addition, valuation methodology for assets, particularly real assets, private assets and others which does not have dairy market value, would be deeply argued so that the plan administrator reflects actual investment return to benefit calculation for the leavers.

When we focus on investment arena in Japan, currency risk hedged foreign bond is no longer just a low hanging fruit because of global low interest rate environment. Although pension plan management would be very long term business, short term headwind cannot be ignorable for plan sponsors. There are not so many cheaper assets so flexible and tactical asset allocation would be essential. However in order to optimize the return on pension plan, better decision making would produce better long term return.

## Acknowledgements

I would like to show my gratitude to my colleagues in Mercer. Nobuo Ohtsuka and Toshio Imai have helped me grow as an investment consultant in Mercer and always been supportive of my professional development giving me valuable professional advices for the practical investment issues around corporate pension plan in dissertation.

I also wish to thank The Japanese Society of Certified Pension Actuaries of and this OSLO 2015 colloquium for giving me to submit this paper. It has been an invaluable experience for me to marshal practices about the Japanese corporate pension plan environment for my learning and I hope to introduce to my actuarial colleagues all over the world through the colloquium.

Finally, last but not least, I want to express my deepest gratitude to my wife and 3-year-old son for their support and encouragement, particularly letting me spend a considerable hours to submit this paper.

## References

1. Bloomberg: for historical investment data gathering
2. Databank: for historical investment data gathering
3. Pension Fund Association (2014): *Basic material about Corporate Pension 2014* (in Japanese)