April 28, 2014
(REVISED)

Department of Finance, Canada
Via email: pensions@fin.gc.ca

Dear Sir/Madam,

Re: Consultation Paper on Target Benefit Plan

I am a retired actuary with interests in the design and development of a robust and sustainable private pension system for Canadians. I am making this submission in response to your request for comments on a proposed regulatory framework for Target Benefit Pension Plans (TBPs), set out in a consultation paper titled *Pension Innovation for Canadians: The Target Benefit Plan*, dated April 2014.

The consultation paper indicates that the Government of Canada intends to incorporate into the *Pension Benefits Standards Act, 1985* (PBSA) provisions for TBPs that would be available to both private sector employers and Crown corporations in federally regulated industries. My comments will focus on the following four (4) key issues identified therein:

1. How the benefits provided under TBPs should be structured;
2. How the TBPs should be funded;
3. When and how deficit recovery/surplus utilization measures should be triggered; and
4. How to convert a defined benefit (DB) plan to a TBP.

I wish to state up front that the TBP design is not necessarily suitable for every employer. One necessary condition for establishing a TBP is that it must cover a sufficiently large number of active members and retired members to allow for effective pooling of investment and longevity risks.

1. How the benefits provided under TBPs should be structured

The proposed federal TBP framework would provide for two classes of benefits with different levels of protection:

- "Base benefits" (e.g., normal retirement pension) that would require a high level of protection; and
- "Ancillary benefits" (including post-retirement indexing) that would have a lower level of protection.

I consider the approach of categorizing benefits into two classes to be appropriate, as it is consistent with the primary objective of a pension plan which is to provide plan members with a basic lifetime pension. To facilitate the regulation of TBPs, the federal legislation should prescribe the minimum standards for benefit categorization.

2. How the TBPs should be funded

The Government has proposed to base the TBP funding requirement on one of the following two approaches:

- A going-concern funding requirement with a provision for adverse deviations (PfAD), where the PfAD would be based on the asset mix of the pension fund and the level of plan maturity (which reflects the relative proportions of liabilities attributable to retired and active members of the plan).
- A going-concern funding requirement and:
    - A primary risk management goal that provides a high probability that the base benefits will not be reduced; and
    - A secondary risk management goal that aims to deliver the ancillary benefits at a lower probability.

I am aware that these approaches have been adopted or are being considered by other Canadian jurisdictions. However, I do not consider that they would provide a sound basis for TBP funding.

Actuarial Cost Method

The proposed funding requirement determines the liabilities and normal cost for the plan based on the *unit credit cost method* (with or without salary projection). Given the unique characteristics of TBPs, I argue that it is inappropriate to use this cost method to determine their funding target and contributions.

TBPs are plans that aim to provide a target defined benefit but are funded by fixed employer (and if applicable, employee) contributions (or by contributions that vary within a specified range). If the fixed contributions are not sufficient to provide the target benefits, members share in the plan risk through adjustment to their benefits and/or making additional contributions.

It should be noted that the normal cost determined under the unit credit cost method tends to rise over time as the plan becomes more mature. In fact, for an earnings-related plan, the normal cost for a member would increase at a rate faster than the growth of the member's pay. If the required contributions to a TBP are determined based on such a method, it might be difficult to achieve the goal of maintaining a relatively stable contribution rate throughout the life of the plan.

For the active members of a TBP, the key funding issue to be addressed should be as follows:

> *Will the fund assets accumulated in respect of the active members to-date plus the future planned contributions by the employer (and if applicable, members) be sufficient to meet the target benefits at retirement set out in the plan?*

At a given point in time, the funding target for active members should be established as the present value of their total projected benefits (for both past service and expected future service). The contribution rate (expressed either as a level dollar amount or a level percentage of pay) required to meet this funding target should then be determined as the rate such that:

$$\begin{gathered} \textit{Value of Fund Assets Related To Active Members} \\ + \\ \textit{Present Value of Future Required Contributions} \\ = \\ \textit{Present Value of Project Benefits for Active Members} \end{gathered} \qquad \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

The present values in Equation (1) are to be calculated using the discount rates described below.

The above method of determining the required contributions is known as the *aggregate cost method*, under which any emerging actuarial gain or loss is spread over future time periods as an adjustment to future required contributions.

Discount Rate Assumption

Another funding issue that should be addressed is the discount rate assumption used to value the target benefits. While not expressly stated, the proposed going-concern funding requirement is based on a discount rate assumption derived from the expected return of the pension fund. This assumption fails to recognize the level of protection desired for target benefits.

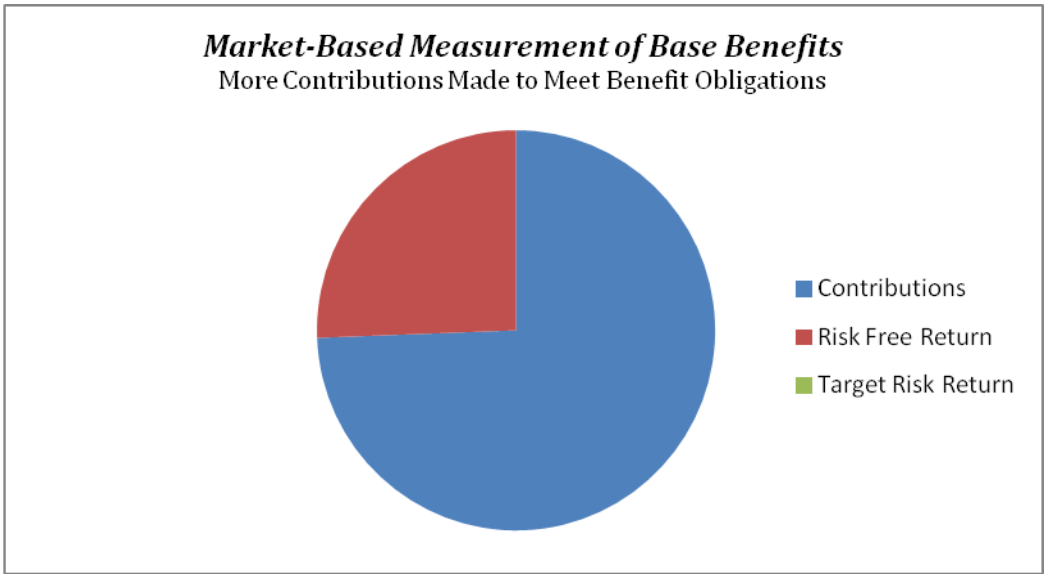
To be consistent with the high level of protection afforded to base benefits, the present value of such benefits should be determined as the amount needed to fulfill all benefit obligations when invested in a portfolio of securities free of default risk whose cash flows match the future benefit payments. As such, for the valuation of base benefits, the legislation or regulations should set the discount rate assumption equal to the long Canada bond yield regardless of the plan's investment strategy. This would make implicit provision for adverse investment performance of the pension fund. The calculated value is sometimes referred to as the *market-based* measurement of benefit obligations.

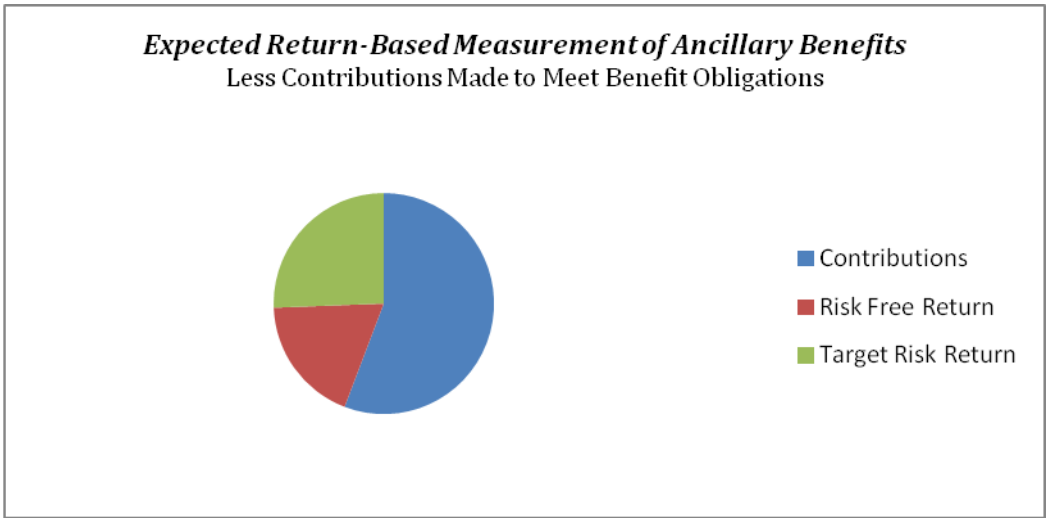
On the other hand, the present value of ancillary benefits can be taken as the amount that is expected to be sufficient to pay all benefits when due if that amount is invested and earns the expected return of the plan's investment portfolio. For the valuation of such benefits, the discount rate assumption can be set equal to the best estimate of the expected return of the pension fund. The calculated value is referred to as the *expected return-based* measurement of benefit obligations.

A technical note on the valuation of base benefits and ancillary benefits is provided in the Appendix .

For the purpose of calculating the present value of future required contributions in Equation (1), the discount rate assumption should be set equal to the average of the discount rates applicable to calculating the present values of base benefits and ancillary benefits, weighted by the calculated present values.

The following diagrams show the funding sources of base benefits and ancillary benefits, under the two measurements of benefit obligations.





Provision for Adverse Deviations

The Canadian Institute of Actuaries (CIA) provides guidance for actuaries in calculating a PfAD for going concern valuations. The PfAD is established as a percentage of liabilities, which are determined based on the unit credit cost method and a best estimate discount rate assumption. Its level varies depending on the asset allocation of the pension fund as well as the degree of plan maturity (as measured by the relative proportions of liabilities attributable to retired and active members). Given the difficulty with unit credit cost method when applying to TBPs, it would be inappropriate for the legislated funding requirement to rely on this CIA guidance.

Intergenerational Equity

In designing a funding regime for TBPs, the Government should also give consideration to the issue of intergenerational equity. To the extent possible, each generation of members should bear their own cost of benefits. Excessive transfer of costs from one generation to another should be avoided.

In this regard, I suggest that the pension fund for a TBP be split into two portions: one related to active members and the other related to retired members and other beneficiaries (collectively referred to as "inactive members"). Upon the retirement of an active member, an amount equal to the liability for the member's accrued benefit, determined using the actuarial assumptions applied in the last valuation, would be transferred from the active portion of the pension fund to the inactive portion of the pension fund for the payment of benefits. The two sub-funds should be managed separately, each with its own investment and benefit adjustment policy.

Contribution Model

The proposed framework would allow for increases and decreases in employee contributions, and would also allow for either fixed or variable employer contributions. I agree that the specific contribution model should be established in the plan text through negotiation. However, the required contribution rate, to be paid by the employer or by both employer and members in any year, should be determined using the aggregate cost method and discount rate assumptions described above.

3. When and how deficit recovery/surplus utilization measures should be triggered

The proposed framework requires that each TBP establish a deficit recovery plan and a surplus utilization plan, either as a standalone document or part of the plan text. I am in favor of prescribing the related measures more fully in legislation or regulations. Below is a suggested model for consideration.

For Active Members

I suggest that the PBSA prescribe an automatic adjustment mechanism to facilitate a sharing of risk between the employer(s) and members, and to help with the accumulation of fund assets toward meeting the target benefits.

In order to reduce the need for making frequent contribution and/or benefit adjustments, the TBP should aim to build up a PfAD in times of favorable experience and to draw upon it in times of adverse experience. For example, the PfAD can be set equal to 10% of the present value of future required contributions determined in a valuation. If the fixed contribution rate specified in the TBP is greater than the required contribution rate, the excess contribution amount will be made to a PfAD account until the 10% goal is reached. Excess contributions not required to build up the PfAD can be used to restore any benefits reduced in prior years, to improve other benefits or to reduce the contributions scheduled to be paid until the next valuation.

If the fixed contribution rate is less than the required contribution rate, the funds available in the PfAD account will first be drawn upon to meet the shortfall. To the extent that the PfAD funds are not sufficient to cover the shortfall, the employer (and if applicable, members) will make additional contributions up to the limit specified in the plan. And if there is still a shortfall in contributions, the members' benefits will be reduced according to the priorities specified in the plan.

For Inactive Members

Under the split funding approach as described above, inactive members would bear the entire risk of investment losses through a reduction of benefits. Benefit security of inactive members is therefore a paramount consideration. It would not be appropriate for the plan to pursue a return-seeking investment strategy on the inactive member fund, except for the portion that is held to provide post-retirement indexing adjustments (which are considered ancillary benefits) if applicable.

At a given point in time, the funded status in respect of inactive members would be determined by comparing their liabilities with the value of the inactive member fund. The liability for any pension in pay (including any related survivor benefits but excluding post-retirement indexing adjustments) should be measured using the market-based approach, i.e., using a discount rate assumption equal to the long Canada bond yield at the time of measurement. On the other hand, the liability for post-retirement indexing adjustments can be measured using the expected return-based approach.

If the inactive member liabilities are not fully funded, a reduction of benefits would be triggered if their funded ratio falls below a certain threshold, say 95%. Post-retirement indexing adjustments would first be suspended before pensions in pay are reduced. Furthermore, in order to maintain equity among inactive members, reduction of pensions in pay would be applied only to those retired members (including their surviving beneficiaries) who have been paid for 5 or more years. Symmetrically, any funding excess above 105% may be applied to increase the benefit entitlements of those retired members who have been paid for 5 or more years.

4. How to convert a DB plan to a TBP

The proposed framework would allow a federally-regulated DB plan, with consent from members and retirees, be converted to a TBP. It would allow all accrued DB benefits at the time of conversion be considered base benefits, and thus can be reduced. Future indexation for retirees would be considered an ancillary benefit. I am in support of this conversion proposal.

If the accrued DB benefits are not fully funded at the time of conversion, the unfunded liability associated with active members should be determined and funded by a special rate of contributions to be paid over the remaining working life of those members. This special rate will continue until the last member at conversion exits from active employment. For purposes of periodic actuarial valuations, an *attained age cost method* [1]

[1] *Attained age cost method* is a variant of *aggregate cost method* which identifies an initial unfunded liability based on the *unit credit cost method*.

with an initial unfunded liability equal to the unfunded liability for active members at conversion would be used.

Any unfunded liability related to inactive members at conversion should be funded immediately.

The liabilities for base benefits at conversion should be measured using a discount rate assumption based on the long Canada bond yield (i.e., market-based measurement of benefit obligations).

Once again, I thank you for this opportunity to comment. I would be happy to discuss further details with you about my submission.

Sincerely,

(*Original signed by*)

Chun-Ming (George) Ma
PhD, FSA, FCIA

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Appendix

Valuation of Base Benefits and Ancillary Benefits - An Illustration

Notation	Description
x	Attained age at date of valuation
y	Normal retirement age
z	Early retirement age
i	Discount rate used for market-based measurement
k	Discount rate used for expected return-based measurement
f	Expected rate of inflation
B_z^e	Early retirement pension expected to be payable at age z
B	Normal retirement pension
$\ddot{a}_y^{(12)}$	Life annuity factor (including any contingent survivor benefit)
${}_np_x^{(T)}$	Probability of a live aged *x* surviving in active service for *n* years according to a service table

Early retirement benefits

The present value at age x of early retirement pension expected to be payable at age z equals:

$$\left(v^{z-x}{}_{z-x}p_x^{(T)}\right)\left(B_z^e\ddot{a}_z^{(12)}\right), \text{ where}$$

the first bracketed term is calculated using discount rate k, and the second bracketed term is calculated using discount rate i.

Post-retirement indexing

Present value at age *x* of normal retirement pension = $\left(v^{y-x}{}_{y-x}p_x^{(T)}\right)\left(B\ddot{a}_y^{(12)}\right)$, calculated using discount rate i.

Present value at age *x* of indexing benefits = $\left(v^{y-x}{}_{y-x}p_x^{(T)}\right)\left(B\widetilde{\ddot{a}_y^{(12)}} - B\ddot{a}_y^{(12)}\right)$, where:

- The first bracketed term is calculated using discount rate *k*;
- $\widetilde{\ddot{a}_y^{(12)}}$ is a life annuity factor calculated using *net* discount rate $j = \frac{(1+k)}{(1+f)} - 1$; and
- $\ddot{a}_y^{(12)}$ is a life annuity factor calculated using discount rate k.