CSP-RC Complete Illustrative Solutions
Spring 2010

1. Learning Objectives:

8. The candidate will be able to recommend and advise on the financial effects of funding policy and accounting in line with the sponsors' goals, given constraints.

Learning Outcomes:

(8d) Advise plan sponsors on accounting costs and disclosures for their retirement plans.

Sources:

Employee Future Benefits – Additional Disclosures, Background information and Basis for Conclusion, Includes Section 3461 from the CICA Handbook (omit p. 1-21, 29-34, 111-115).

R-C103-09: Comparison of IAS 19 with FAS87/88/106/132®/158, CICA 3461 and FRS 17 – Summary of Provisions Affecting Accounting for Post Retirement Benefits, Towers Perrin

Commentary on Question:

Candidates seemed to do well with this question. This may be because similar questions had been asked in the last year examination.

Some candidates calculated the unrecognized gain and loss correctly based on a reconciliation of accrued asset/liability rather than calculating the difference of expected and actual accrued benefit obligation and assets and reconciling of unrecognized gain and loss.

Most candidates were able to demonstrate that plan freeze would trigger a curtailment under CICA 3461 in the salaried plan.

However, only a few good candidates had mentioned that the decrease in the accrued benefit obligation should be reduced by that loss with any excess included in the curtailment gain.

A few candidates did not calculate the curtailment gain properly under the Salaried Plan and a few candidates had provided answers which are contradicting to each other. As a result, they had not been able to receive the full credit.

1. Continued

For the Supplemental Retirement Plan (SRP), the increase in accrued benefit obligation in the plan would theoretically trigger a curtailment loss. However due to the lack of syllabus material and enough information in the question, an alternative approach of establishing a new layer of prior service cost is also acceptable.

Solution:

1. Impact on NOC's 2010 accounting expense for the Salaried Plan

Expected Salaried Plan's PBO as of January 1, 2010 (Before Plan Freeze)
Rollforward of APBO to January 1, 2010=APBO + service cost + interest cost – expected benefit payments as of 12/31/09

$$= 1{,}110{,}336 + 52{,}495 + 66{,}058 - 28{,}000$$

$$= 1{,}200{,}889$$

Expected Salaried Plan's Assets as of January 1, 2010 (Before Plan Freeze)
Rollforward of Assets to January 1, 2010 = BOY assets + Contributions + Expected Return on Assets – Expected Benefit Payments
=875,898+40,526+61,751-28,000
=950,175

APBO (G)/L = Actual APBO at 1/1/2010 – Expected APBO at 1/1/2010 before the plan freeze

$$= 1{,}297{,}000 - 1{,}200{,}889$$

$$= 96{,}111$$

Asset (G)/L = Expected Assets at 1/1/2010 – Actual Assets at 1/1/2010 before the plan freeze
=950,175-969,200
= (19,025)

Rollforward of Unrec Gain/Loss to January 1, 2010 = BOY (G)/L – (G)/L Amort + APBO loss + Asset (g)/L
Rollforward of Unrec Gain/Loss to January 1, 2010

$$= 141{,}037 - 2{,}857(\text{amort. in } 2009) + 96{,}111(2009 \text{ ABO loss}) - 19{,}025(2009 \text{ asset gain})$$

$$= 215{,}266$$

1. Continued

Alternative way of calculating unrecognized gain and loss for Salaried Plan as of January 1, 2010:

Accrued benefit asset/ (liability) as of January 1, 2010 = Accrued benefit/asset/ (liability) as of January 1, 2009 – 2009 expense + 2009 contribution

$= 93,400 - 59,659 + 40,526$

$= (112,533)$

Funded status as of January 1, 2010 before plan freeze = Market value of asset – ABO
= 969,200 – 1,297,000
= (327,800)

Unrecognized (gain)/loss = Accrued benefit asset/ (liability) – funded status as of January 1, 2010 – unrecognized prior service cost – unrecognized transition obligation
= (112,533) – (327,800)
= 215,267

The impact effect of plan freeze on Salaried Plan's 2010 pension expense (Numbers in 000s):

Curtailment – Since reduction in 100% of future service must recognize unrecognized psc, transition obligation and change in ABO due to curtailment as 1/1/2010.
As there is a decrease in the accrued benefit obligation and an unrecognized actuarial loss exists, the decrease in the accrued benefit obligation should be reduced by that loss with any excess included in the curtailment gain.

Curtailment gain = Decrease in the accrued benefit obligation – unrecognized actuarial loss

$= (1,297,000 - 907,900) - 215,266$

$= 173,834$

The salaried Plan's 2010 pension expense (numbers in 000s):

DB Expense = Service Cost + Interest Cost – EROA + Amort PSC + Amort (G)/L + curtailment gain
Service Cost: Service cost is zero since no future service accruals (plan frozen)

1. Continued

IC = interest on APBO and SC – half a year's interest on benefit payments
IC = (907,900+0)*0.055-28,000*.5*.055
=49,165

Alternative Compound interest Solution: 49,175
EROA=-[1/1/10 Assets + (.5*(Contributions-Benefit Payments))]*.07
EROA = -[969,200+.5*(0-28,000)]*.07
=66,864
Alternative Compound interest Solution: 66,881

Prior service cost amortization = $0; Amort PSC: No longer an amortization of prior service cost since all recognized in curtailment

Actuarial (Gain)/Loss amortization = $0; Amort of (G)/L: No longer an amortization since all recognized in curtailment

2010 DB Expense/ (Income) = 0 + 49,165 – 66,864 +0 +0-173,834
= (191,533)
Alternative Compound interest Solution: (191,540)

2. **Impact on NOC's 2010 accounting expense for the SRP**

Expected SRP's PBO as of January 1, 2010 (Before Plan Freeze)
Rollforward of APBO to January 1, 2010 = APBO + service cost + interest cost – expected benefit payments as 12/31/09

$$= 39,270 + 1,272 + 2,322 - 315$$

$$= 42,549$$

APBO (G)/L = Actual APBO at 1/1/2010 – Expected APBO at 1/1/2010 before the plan freeze

$$= 46,000 - 42,549$$

$$= 3,451$$

Rollforward of Unrec Gain/Loss to January 1, 2010 = BOY (G)/L – (G)/L Amort + APBO loss + Asset (G)/L
Rollforward of Unrec Gain/Loss to January 1, 2010 = 2,545 – 0(Amort. in 2009) + 3,451(2009 ABO loss)
=5,996

1. Continued

Alternative way of calculating unrecognized gain and loss for SRP as of January 1, 2010:

Accrued benefit asset/ (liability) as of January 1, 2010 = Accrued benefit asset/ (liability) as of January 1, 2009 – 2009 expense + 2009 contribution

$$= -36,725 - 3,594 + 315$$

$$= (40,004)$$

Funded status as of January 1, 2010 before plan freeze = Market value of asset – APBO prior to plan amendment

$$= 0 - 46,000$$

$$= (46,000)$$

Unrecognized (gain)/Loss = Accrued benefit asset/(liability) – funded status as of January 1, 2010 prior to plan amendment – unrecognized prior service cost – unrecognized transition obligation
= (40,004)-(46,000)
=5,996

The SRP's 2010 pension expense (numbers in 000s):

DB Expense = Service Cost + Interest Cost – EROA + Amort PSC + Amort (G)/L
Service Cost = 1,374

IC = Interest on APBO and SC – half a year's interest on benefit payments
IC = (56,000+1,374)*.055-300*.5*.055
=3,174

Alternative Compound interest Solution: 3,147
Expected Return on Assets EROA = 0 (unfunded SERP)

For the Supplemental Retirement Plan (SRP), the increase in accrued/projected benefit obligation in the plan would theoretically trigger a curtailment loss.

An alternative method of establishing a new layer of prior service cost is also acceptable.

1. **Continued**

Alternative Approach:

Establish a new layer of prior service cost

Unrecognized prior service costs as of January 1, 2010 = Projected Benefit Obligation as of January 1, 2010 After Plan Amendment minus Projected Benefit Obligation as of January 1, 2010 Before Plan Amendment

$= \$56,000 - \$46,000$

$= \$10,000$

Prior service cost amortization = Unrecognized prior service costs as of January 1, 2010/ EARSL

$= 10,000 / 5.90$

$= 1,695$

Amort G/L = (Unrec G/L – 10% of max (APBO, Assets)) ÷ Average Future Working Lifetime

$\text{Amort G/L} = (5,996 - .1 * \max(56,000, 0)) \div 5.9$

$= 67$

$2010 \text{ DB Expense/(Income)} = 1,374 + 3,147 - 0 + 1,695 + 67$

$= 6,283$

2. Learning Objectives:

1. The candidate will be able to analyze the risks faced by retirees and participants of a defined benefit or defined contribution retirement plan.

3. The candidate will be able to evaluate risks faced by sponsors of a retirement plan by virtue of the plan's design and be aware of methods to mitigate these risks.

Learning Outcomes:

(1d) Describe the risks faced by participants of single employer sponsored retirement plans

(3a) Identify how plan features, temporary or permanent, can adversely affect the plan sponsor

Sources:

Retirement Plan Designs for the 21st Century, Pension Forum, December 2008

Post Retirement Risks Chart, SOA

Key Findings and Issues: Understanding and Managing the Risks of Retirement

Commentary on Question:

Candidates were expected to review two plan designs and describe how each of these designs share investment and longevity risks between the plan sponsor and the plan members. Minimal or no credit was given for providing definitions, discussing hedging or risk-taking strategies, other plan designs or the legality of such plans in Canada.

Solution:

(i) <u>General</u>

Cash balance (CB) plan is a defined benefit plan
CB settlement generally payable as a lump sum at retirement

<u>Employee Risk - Investment</u>

Investment risk is eliminated if credited rate is guaranteed
If credited rate tied to a passive index, Employees retain some of risk
Plan may provide Employee choice as to index

<u>Employee Risk - Longevity</u>

If CB only provides lump sum, Employee has longevity risk
Employee can purchase annuity with lump sum to avoid this risk
CB plan can provide an equivalent annuity as well

2. Continued

Employer Risk - Investment
If return guaranteed, employer has all investment risk
Can shift some of risk by using passive index for crediting rate
Can provide employees with choice of index

Employer Risk - Longevity
Longevity risk assumed by employer if employee does not select lump sum

(ii) General
Add a feature that guarantees a return up to some point

Employee Risk - Investment
Employee protected from downside
Investment risk only partially mitigated
If employer goes bankrupt, investment guarantees gone
Employee can minimize investment risk by diversification

Employee Risk - Longevity
Benefit provided as lump sum so employee has longevity risk
Employee can purchase annuity with lump sum to avoid this risk

Employer Risk - Investment
Employer takes risk of the rate guarantee
Employer should manage the portfolio to minimize risk
Employer can manage his risk by setting an investment policy that reflects the Employees choice of index
Might be able to buy variable annuities to hedge risk
Differences of return over guarantee allocated to a reserve to be used when actual returns less than guarantee
Cost neutral if guarantee set below expected mean return of plan

Employer Risk - Longevity
If employees can choose lump sums or annuities, can create longevity risk due to anti-selection

3. Learning Objectives:

8. The candidate will be able to recommend and advise on the financial effects of funding policy and accounting in line with the sponsors' goals, given constraints.

11. The candidate will be able to analyze the issues facing retirement plan sponsors regarding investment of fund assets and make recommendations on the actuarial issues.

Learning Objectives:

(8d) Advise plan sponsors on accounting costs and disclosures for their retirement plans.

Sources:

Employee Future Benefits – Additional Disclosures, Background Information and Basis for Conclusion, Includes Section 3461 from the CICA Handbook

Fundamentals of Retiree Group Benefits, Yamamoto, 2006, Chapter 7 and Chapter 8 pp. 211-235

Commentary on Question:

This question applies the concepts of settlement reporting and expense calculations to a post-retirement medical benefit plan situation. Candidates were also given credit for the alternate approach of treating the financial effects of the lump sum settlement as a liability remeasurement, prior to calculating settlement effects.

Solution:

- Buyout program will result in settlement reporting in 2009.
- There is no curtailment since the program is only offered to retirement-eligible members whose expected future service is zero.
- Settlement is a transaction that a) is an irrevocable action, b) relieves the employer of primary responsibility of any post-retirement benefit obligation and c) eliminates significant risks related to the obligation and the assets used to effect the settlement.
- Total lump sum payment to opt out retirement-eligible members
  = 300,000 x 600 = 180,000,000.
- Future expected benefit payment reduces to 22,000,000.
- Prorata portion U/R Net Loss* recognized (in 000's)
  = 240,000/1,574,841 X 226,210 = 34,474.

3. Continued

The calculation of the contribution and settlement impact at 1/1/2009 is a follows:

($'000)	Funded Status Before Settlement	Settlement	Funded Status After Settlement
APBO at 1/1/09	(1,574,841)	240,000	(1,334,841)
Fair Value of Assets	500,000	(180,000)	320,000
Funded Status	(1,074,841)	60,000	(1,014,841)
*U/R Net loss	226,210	(34,474)	191,736
U/R PSC	-		-
U/R Transition	-		-
Accrued Benefit (Asset)/Liability	(848,631)	25,526	(823,105)

2009 Expense ($'000)		
(a) Service cost		57,210
(b) Interest cost	(APBO+SC-BP/2) x discount rate (1,334,841+57,210 -22,000/2) x 5.75% =	79,410
(c) Expected return on assets	(MV-BP/2) x EROA (320,000-22,000/2) x 6% =	(18,540)
(d) Amortizations:		
- Prior service cost		-
- Unrecog (Gain)/Loss	U/R Loss-10% max(APBO,MV))/AFS (191,736-10%x1,334,841)/17 =	3,427
(e) Subtotal		**121,507**
(f) Settlement cost /(income)		(25,526)
Total 2009 expense/(income)		**95,981**

Alternate Solution – buyout payment treated as a liability remeasurement

- Gain from remeasurement (in 000's)
  = 240,000 – 180,000 = 60,000
- Revised APBO at 1/1/09
  = 1,574,841 – 60,000 = 1,514,841
- Revised U/R net loss
  = 226,210 – 60,000 = 166,210
- Prorata portion U/R Net Loss* to be recognized
  = 180,000/1,514,841 X 166,210 = 19,750

3. Continued

The calculation of the contribution and settlement impact at 1/1/2009 is a follows:

($'000)	Funded Status Before Settlement	Settlement	Funded Status After Settlement
APBO at 1/1/09	(1,514,841)	180,000	(1,334,841)
Fair Value of Assets	500,000	(180,000)	320,000
Funded Status	(1,014,841)	-	(1,014,841)
*U/R Net loss	166,210	(19,750)	146,460
U/R PSC	-		-
U/R Transition	-		-
Accrued Benefit (Asset)/Liability	(848,631)	(19,750)	(868,381)

2009 Expense ($'000)		
(a) Service cost		57,210
(b) Interest cost	(APBO+SC-BP/2) x discount rate (1,334,841+57,210-22,000/2)x5.75% =	79,410
(c) Expected return on assets	(MV-BP/2) x EROA (320,000-22,000/2)*6% =	(18,540)
(d) Amortizations:		
- Prior service cost		-
- Unrecognized (Gain)/Loss	(U/R Loss-10% max(APBO,MV))/AFS (146,460-10%x1,334,841)/17 =	763
(e) Subtotal		**118,843**
(f) Settlement cost /(income)		19,750
Total 2009 expense/(income)		**138,593**

4. Learning Objectives:

8. The candidate will be able to recommend and advise on the financial effects of funding policy and accounting in line with the sponsors' goals, given constraints.

11. The candidate will be able to analyze the issues facing retirement plan sponsors regarding investment of fund assets and make recommendations on the actuarial issues.

Learning Outcomes:

(8f) Advise plan sponsors on their financial implications.

(8i) Merger and acquisitions.

(11) Able to analyze the issues facing retirement plan sponsors.

Sources:

R-C118-07: Pension Issues in Corporate Sales, Mergers and Acquisitions Acquiring a US Operation

R-C144-10: Mergers and Acquisitions: Due Diligence of Retirement Plans

Handbook of Canadian Pension and Benefit Plans, Morneau Sobeco Chapter 6 and 8

R-C120-07: Introduction and Overview of Retirement Plan Investments

Commentary on Question:

Many candidates only identified the differences in the assumptions without indicating the implications (e.g. funding interest rates between two plans are different and the selection of interest rate will affect contribution requirements).

We would also like to see candidates identify if the assumptions used to determine the assets transfer are appropriate. However, only a few candidates mentioned that.

Some candidates provided a list from the textbooks regarding the process of purchase and sale (e.g. due diligence, collecting documents) which are not related to the funding/accounting/investment issues.

Solution:

<u>Accounting Issues</u>

- There might be a funding deficit as the assets transferred to the XYZ plan are determined based on NOC's accounting assumptions which are not as conservative as XYZ's funding assumptions.
- The assumptions used for this purpose may not be appropriate in relation to the sale or merger transaction.
- Need to review the assumptions used by vendor to see if they are within buyers practice.

4. Continued

- Discount rate difference between NOC and XYZ. This is critical as asset transfer based on it.
- NOC's assumptions are more aggressive than that of XYZ's which will produce a lower liability (i.e. assets to be transferred to XYZ).
- XYZ's salary assumption is 4.25% vs. NOC's 3.5%. The appropriate salary scale will depend on XYZ's compensation policy.
- NOC's termination assumption outdated. Any recent experience study to see if assumptions are still valid.
- NOC's retirement assumption does not reflect pre 62 subsidy. Any recent experience study to see if assumptions are still valid.
- NOC's mortality assumption outdated. Any recent experience study to see if assumptions are still valid.
- Are the accounting policies of the vender the same as that of the purchaser?
- Is the pension expense of the vendor underestimated or overestimated which may overstate?
- Are the dates used for valuation purposes up to date?

<u>Funding Issues</u>

- Selection of discount rate for funding purposes significantly affects contribution requirements.
- Significant differences in discount rate (7% vs. 5%).
- Are there any surplus issues – should review plan text carefully and trust agreement?
- Merge pension funds or keep them separate.

<u>Investment Issues</u>

- Review and update investment policy, if necessary.
- Need to review asset mix due to new demographics and changes in asset mix may impact the level of employer contributions and discount rate selection.
- Review all investment manager agreements and agreements with service providers.

5. Learning Objectives:

7. The candidate will be able to evaluate the sponsors financial goals and risk management with respect to their plan.

10. The candidate will be able to analyze the regulatory environment as it affects retirement plans.

Learning Outcomes:

(7a) Describe ways to work with the sponsor on identifying and prioritizing the goals of management and shareholders related to the financial management of their retirement plans

(10a) Evaluate the effect of regulatory policies and restrictions, for all retirement plans, associated with:

- Plan design
- Plan establishment
- Plan amendment
- Plan termination/windup
- Plan merger or spin-off
- Reporting requirements
- Members' rights
- Plan funding
- Contributions and benefits
- Individual savings plans
- Coordination of individual and employer sponsored retirement plans
- Economic value to shareholders

Sources:

McGill, Chapter 14

Handbook of Canadian Pension and Benefit Plans, Morneau Sobeco, Chapters 5 and 6

Pension Forum, June 1996, Funding Adequacy

R-C116-07: Mercer - Financing the Future: How Fit is Your Funding Policy

Improving Funding and Disclosures: What's in it for Me?

Commentary on Question:

This question requires candidates to assess advantages and disadvantages for plan sponsors, plan members and government/society due to change in minimum contributions requirement. Credit was given for any advantage/disadvantage where appropriate justification was provided; however, no points were given for listing different funding policies without applying the list to this specific case.

5. Continued

Solution:

Plan Sponsors

Because of lower minimum funding contribution requirements, the employer is more likely to be able to keep its pension plan active as well as the likelihood of the employer freezing or terminating the plan decreases. The new funding regulations can increase the attractiveness of DB plans and more employers might offer DB plans in the future.

In addition, employers may have more profitable business uses for the cash or more pressing cash flow needs, such as:

- Extra cash for other purposes
- Pay wages
- May not have to lay-off people.

The minimum required contributions will be lower and more affordable. They will be more predictable and as a result it will be easier to budget for future pension cost. This is because amortizing gain/losses over 15 years instead of 5 years will lower cost volatility leading to greater cost control, and at times the sponsor does not want to pay any more contributions than are necessary. The plan sponsor will be able to contribute less when the financial conditions are tough and more when they improve.

Other Implications:

- Sponsors might need to increase future contributions since benefits and expenses are funded by contributions and investment income and delaying contributions reduces investment income.
- Lower contributions will increase pension expense.
- Lower tax deductions on contributions.

Plan Members

Since employers are allowed to contribute a smaller amount into pension plans, benefit security for participants will be at risk as there might not be sufficient assets on hand when employees retire. However, smaller required contributions mean that it is more probable that employer will keep the DB plan active.

- Employer will not need to freeze the pension plan.
- Employer will not terminate the pension plan.
- Employees will continue accruing benefits.
- Employees will still have the security of a defined benefit plan.

Lower funding could affect employee morale if they feel there benefit is at risk. Employees are looking to maximize compensation (earnings and pension income) and because of the new regulations they might be able to do that.

5. Continued

Government / Society

Lower deductible contributions means less employer deductions and thus higher tax revenue. In the current year, for the government the additional revenue could be used to support other government programs. By introducing the new funding regulations, the probability that employers will keep their pension plans active will increase and this reduces dependence on government-funded programs.

The lower required contributions means the employer will be more likely able to pay wages and less people will become unemployed or go on disability decreasing the need for governmental support. The lower contributions encourage employers to keep DB plans versus DC plans and DB plans are believed to have a greater benefit to society. However, relaxed contribution requirements for employer-sponsored pension plans might result in insufficient assets to cover benefits and more pressure on the Social Security system and other entitlement programs if the new regulations lead to excessive under funding of pension plans.

Lower contributions:

- May result in insufficient assets and society may have to support retired people with inadequate income;
- May lead to pension plans not being adequately funded and may transfer the funding risk from the employer to taxpayer; and
- Might result in more underfunded DB plans thus more pressure on guaranty funds (many countries require pension insurance) as well as premiums to guaranty funds might not be risk related and some companies might not try to better fund their plans to pay lower premiums.

6. Learning Objectives:

11. The candidate will be able to analyze the issues facing retirement plan sponsors regarding investment of fund assets and make recommendations on the actuarial issues.

Learning Outcomes:

(11b) Distinguish the various ways that retirement fund assets are managed.

(11h) Identify the sources of investment risk and assess risk facing retirement funds.

(11i) Evaluate immunization strategies and other hedging techniques for asset/liability management.

Sources:

R-C149-10: Plan Sponsor Guide to Liability –Driven Investing, BNY Mellon, Asset Management

R-C147-10: How Pension Plan's Funding Level Should Influence its Investment Strategy, Vanguard, Both

R-C148-10: Jim Moore Discusses Liability Driven Investment Strategies and Concepts, Product Focus, May 2007

"Full Circle, Purchasing Annuities in DB Plans", Ruloff
http://www.soa.org/library/monographs/retirement-systems/managing-retirement-assets-symposium/2004/march/m-rs04-2-05.pdf

R-C114-07: "A Fresh Look at Pension Risks" – MercerHR.com

R-C112-07: Pension Investment and Corporate Risk Management

Commentary on Question:

Part (a) of this question required the candidate to demonstrate that he/she understands the interest risk inherent in the Salaried Pension Plan and the value of reducing such risk. Credits were given for providing the advantages and disadvantages of reducing the interest rate risk as well as evaluating the potential impact of such strategy to the Salaried Pension Plan.

No credits were given to discussing/recommending other investment strategies except when it is utilized to compare and contrast with the Treasurer's proposal. The question specifically deals with interest rate risk; therefore no credits were given by merely identifying other pension risks.

6. Continued

Part (b) of this question required the candidate to list and describe alternative approaches to reducing interest rate risk. Partial credits are given for listing different investment approaches but full credits are given for describing the approach and how it helps reduce interest rate risk.

Solution:

(a) Evaluate the Treasurer's proposal.

- In most pension plans, the duration of plan assets is considerably less than the duration of plan liabilities. The results of this duration mismatch are that asset and liability values may not move in tandem when interest rates change. The duration mismatch is the interest rate risk of the pension plan.
- Investment approach has to take into account the impact of changes in interest rates to both assets and liabilities, and ultimately to the funded status of the plan.
- Given that the plan is fully funded, the primary objective is to maintain its full funding status.
- Proposal helps in increasing the likelihood that the plan will remain fully funded and thus reduce funded status volatility.
- The Plan's interest rate risk is considered non-compensable risk (uncompensated risk) since the risk does not offer any incremental expected return. Therefore, reducing this risk allows the company's risk budget to be more productively allocated to compensable risks.
- Consider the relative size of the firm as compared to the Plan. If plan is relatively large, the effect of the interest rate risk to plan funding status is much more relevant to the firm's bottom line.
- Investment approach protects downside risk of plan funded status ratio and therefore makes benefits more secure for employees.
- Limits the upside potential of earning higher returns.
- Minimizes volatility of funding requirements - solvency valuation requirements in Canada.
- Stabilizes pension expense on income statement
- Reduces balance sheet volatility.

(b) Describe alternative investment approaches for implementing the Treasurer's goal.

- Dedication strategy or cash flow matching – almost impossible to do especially for ongoing plans that continue to accrue benefits.
- Immunization strategy – create an immunized bond portfolio that matches the duration of assets and liabilities.
- Extend the duration of the asset portfolio through purchase of longer-term bonds.

6. Continued

- Use of derivatives as part of an overlay strategy so that current asset mix does not necessarily have to be changed.
- Interest rate swap strategy:
  - Involves a periodic exchange of cash flows where one is based on a fixed rate and the other based on a market reference rate.
  - Since DB plans typically have a negative duration gap (i.e., asset duration - liability duration is negative), consider entering into a receive-fix interest rate swap that has a positive duration.
- Swaption – option-based strategy involving the right but not the obligation to enter into an interest rate swap. Pension plan purchases a receiver swaption strategy that protects the plan from drops in the interest rates. However, there is an up-front premium charged for the option.
- Swap collars – involves the purchase of a swaption and selling another swaption at a higher strike rate in order to eliminate or reduce the up-front premium.
- Utilize Treasury futures to increase the asset's duration.
- Divide the assets into two components – a) fully funded portion will use any of the above LDI approach while b) the surplus portion can be used to generate excess returns.
- Construct interest-sensitive stock/equity portfolio – reduces interest rate risk without lowering expected returns relative to a bond portfolio.
- Annuitize the benefits – transfers the risk to insurer but is then exposed to insurer's solvency risk.

7. Learning Objectives:

6. The candidate will be able to understand the general applicability and design of long-term incentive.

Learning Outcomes:

(6a) The candidate will be able to describe the design of stock purchase, stock option and phantom stock plans.

Sources:

Handbook of Canadian Pension and Benefit Plans, Morneau Sobeco, Chapter 12

RC-110-07: TP Handbook of Executive Benefits Ch 15

Commentary on Question:

A well prepared candidate would be able to discuss the key aspects of stock based-compensation as well as other supporting information. They would also address risks associated with these plans.

Solution:

(a) Stock Purchase Plans

- Encourage employees to save and invest in company's stock.
- Savings convenience of payroll deductions.
- Participation is voluntary.
- Maximum placed on number of shares a member may buy or amount of money used to buy shares.
- If price of share is less than fair market value of shares, employee must pay tax on difference.

Stock Options Plans (aka Incentive Stock Options)

- Incentive for employees to increase company profitability and thus raise price of shares.
- Retain key employees by creating opportunity cost if they were to leave employment (right to exercise optioned shares).
- Attract talent.
- Method to compensate employees that is more tax effective than salary increases.
- Employees given option to buy specified amounts of stock at a fixed price on the day option is granted.
- Cliff vesting or graded vesting.

7. Continued

- Provide potential gains with no downside risk.
- Taxable benefit (fair market minus option price); rules allow for some reduction in taxes.
- Up to $100,000 of options that vest in a year.
- Restrictions on owners of more than 10% of all shares.
- Tax deferred until earliest of year sold, death or year member becomes a non-resident.
- Other rules that can enhance reduction of tax.

Phantom Stock Plans (aka Deferred Share Unit)

- Bonus or incentive plans where bonus determined by reference to value of company's stock.
- Member account credited with notional shares, dividends and capital appreciation of stock.
- Value is paid out as cash currently or accumulated until death/termination/retirement.
- Executive is taxed and company can take tax deduction when benefit is paid.
- Executive does not get capital gains treatment.
- Cannot take advantage of market fluctuations and trade stock.
- If stock increases quickly, benefit is expensive to company since paid in cash and not absorbed by market.

(b)

- The amount in the plan could be overvalued. Since these are stock plans, there is the possibility that value could decrease. If an employee is counting on cashing in their stock at a point in the future, they could be disregarding the possibility of the value lowering.
- It could be difficult for employees to understand the true economic value of the plans and so they may not participate.
- The employee could face a risk of having an excessive concentration in employer stock.
- The employee needs to understand the tax treatments of the plans.

7. Continued

- Phantom plans are not funded and employee is exposed to risk that the company cannot pay.
- Such plans are indefinite as to the ultimate amount of retirement income that the employees may receive; not designed for retirement savings.
- Stock options are worthless if stock does not reach strike price. Employee may not be allowed to exercise stock options at the right time.
- Employee may not reach vesting criteria in stock option plans and phantom stock plans.
- Phantom shares and options are not liquid nor portable.

8. Learning Objectives:

5. The candidate will be able to synthesize and evaluate deferred compensation and supplemental retirement plans for the highly paid in a given context.

Learning Outcomes:

(5d) Analyze the options for securing the benefit promise.

(5e) Assess the taxation issues.

Sources:

Morneau Sobeco, Handbook of Canadian Pension and Benefit Plans, Fourteenth Edition, 2008, Chapter 11

R-C602-07: "Funding Supplementary Pension Plans" by Theroux

R-C603-07: "RCA: Curmudgeonly Excursion" by Theroux

Commentary on Question:

In part (a), candidates were expected to evaluate the pros and cons of funding a benefit plan which has no tax efficiencies. The analysis should include looking at the advantages and disadvantages from the following stakeholders perspectives: the administrator of the plan (NOC) and the beneficiaries of the plan (executives).

In part (b), candidates were expected to describe four funding alternatives. Credit was not given for addressing more than four alternatives.

Solution:

(a) NOC (employer) perspective

Disadvantages:

- Not tax efficient: Money set aside for the benefits are not tax deductible until the benefit is received by the participant which is contrary to other plans where the contributions are immediately tax deductible for the company
- Adding administration complexity: Need more plan documentation explaining the funding method, additional regulatory and disclosure compliance requirements
- Plan design restrictions: Surplus ownership issues, may not be able to change plan design for past accruals
- Minimum funding requirements: Will be required to fund the plan annually
- Fiduciary responsibility: Need to review governance model for the plan, asset allocation review, plan documentation
- May be inappropriate to fund executive benefits as some believe that if the ship goes down the executives should not be compensated (ethical dilemma)

8. Continued

- Requires cash: Will NOC have enough cash to finance these benefits every year
- Financial Statement volatility, impact on balance sheet and income statement: How will the financing option match the plan liabilities, what assumptions to use – depends on funding method
- Capital dilemma: NOC may be better off using cash to reinvest in company
- May be funding benefits that are never paid out (because employee terminates) and thus increasing cost of plan

Advantages:

- Executives will value the plan more as it becomes more secure when it is funded, may be easier to retain executives
- May help in attracting executives; plan is more competitive if funded
- No intergenerational inequity: Today's generation is paying for the accrued benefits, more equitable

Executives (employee) perspective

Disadvantages:

- May have adverse tax consequences (if deemed to be constructive receipt)
- Not total security as assets are still subject to creditor risk in the event of bankruptcy

Advantages:

- Benefit is more secure
- If NOC goes out of business or change in control, there are assets to fund the promise and creditors do not have access to money
- Changes to government policy won't affect past SRP benefits if they are funded

(b) Types of Funding Vehicles - Candidate to describe 4 of the following:

1. Pay As You Go (Unfunded)
   - Benefits are taxed on payment of the SRP benefit.
   - Methods in which benefits for participants are the most unsecured. If company goes bankrupt there are no assets to pay benefits.
   - Benefit payments/cash flow for the company is very volatile (unpredictable).
   - Most common method.

8. Continued

2. Terminal Funding
   - Employer pays a lump sum or installments over a short period of time.
   - An annuity may be bought for the participants as they retire to cover the payments.
   - There is some benefit security at the time that the participants retire.
   - Benefit payments/cash flow for the company is very volatile and will require larger lump sums than pay as you go.
   - Lump sum amount is fully taxable to employee on receipt.

3. Other Life Insurance (Exempt Policy)
   - Company buys life insurance on life of executive.
   - The life insurance policy is used as collateral for the SRP.
   - The accrual earnings within the policy are tax exempt and the ultimate death benefit is tax exempt. Must be held until the death of the insured.
   - The premiums are taxable to the employee.

4. Funded RCA
   - RCA trust receives half of the employer contributions which are deductible and the other half is held in the refundable tax account (same as RCA earning).
   - 50% refundable tax.
   - Contributions deductible for the employer.
   - Employee contributions deductible.
   - Executives taxed on distributions.
   - Benefit is secure if bankruptcy or change of control.
   - Investment returns on only 50% of cash.

5. Letter Of Credit RCA
   - RCA is used to hold a LOC which is usually equal to twice the LOC issuance fee because employer contribution to RCA is subject to 50% refundable tax.
   - LOC is a bank's promise to pay if employer fails to pay pension.
   - The LOC is held in the name of the RCA trust which insulates the executives against any taxable benefit if the employer were to obtain the LOC.
   - LOC price is determined by the creditworthiness of the employer.
   - Less cash flow requirements.
   - Still have to fund benefits as they come due so cash flow is volatile.

8. Continued

6. RCA Split dollar life insurance
   - Life insurance is bought on life of executive and used as collateral in the RCA.
   - The investment component of the life insurance policy is held by the RCA and the pure death benefit is held by the corporation. The investment component could be pledged to a bank which would pledge a loan to the RCA. The RCA would loan an equal amount to the employer to use in daily business activities. The employer would pay interest on the loan to the RCA which would itself pay interest to the bank.
   - Twice the amount of premium is deemed to be a contribution subject to 50% refundable tax.
   - Income earned is not subject to 50% tax.
   - Policy proceeds are unencumbered property of company and less secure for executives.
   - Policy must be held until death of executive to avoid negative tax implications.
   - If an exempt policy, no 50% tax on investment income. Death benefits paid to RCA are exempt, but benefits paid from RCA to employee and beneficiaries are taxable.

7. Secular Trust
   - Employer pays additional salary on condition employee sets up trust with restrictions on withdrawals.
   - Employer contributions to the trust and earnings are taxable to the executives in the year of allocation.
   - Employer contributions to the trust are tax deductible for the employer.
   - No tax deferral for the executive.

9. Learning Objectives:

11. The candidate will be able to analyze the issues facing retirement plan sponsors regarding investment of fund assets and make recommendations on the actuarial issues.

Learning Outcomes:

(11a) Assess the different types and combinations of investment vehicles for providing retirement benefits given the particulars of the sponsor's financial circumstances, philosophy, industry, workforce and benefit package.

(11b) Distinguish the various ways that retirement fund assets are managed.

(11h) Identify the sources of investment risk and assess risk facing retirement funds.

Sources:

Modern Investment Management, Litterman, Chapter 21 and 24

Handbook of Canadian Pension and Benefit Plans, Morneau Sobeco, Chapter 6

Retirement Plans, Allen, Chapter 24

Commentary on Question:

Candidates' performance varied for this question, which seemed to be useful in separating those candidates with limited knowledge of the material being tested and those with extensive knowledge of the material being tested. Using a part (a) and a part (b) seemed to be effective in focusing candidates on what was being asked. Part (a) was quite straight forward, while part (b) led to far more diverse responses. One difficult aspect of part (b) was that it pulled from several different sources. Many candidates limited their responses to material they remembered from just one or two sources, which caused them to leave points on the table.

Solution:

(a) NOC should consider the following key risks to actively-managed fixed income investing:

- Interest rate risk
  - Risk that yield will change due to changes in the level of interest rates
  - Measured by duration
  - Impact of inflation is an important consideration
- Yield curve risk
  - Risk that yield will change due to the shape of the yield curve
  - Measured by key rate duration

9. Continued

- Sector risk
  - Risk attributable to changes in spread between a sector NOC is exposed to and the baseline yield curve
  - Measured by contribution to duration
- Credit risk
  - Risk that bond issuer will default
  - Credit ratings can be used to assess risk
- Volatility risk
  - Risk that yield will change due to interest rate volatility
  - Measured by convexity and volatility duration
  - Consider gamma and vega exposures
  - Commonly found in assets with asymmetric payouts
- Prepayment risk
  - Risk of overestimating or underestimating prepayments
  - Often tied to mortgage-backed securities
  - Measured by prepayment duration
- Currency risk
  - Risk of exposure to foreign currencies
  - Not an issue for NOC because not invested in foreign fixed income
  - Risk can be hedged away
- Security specific risk
  - Risk of change in the market perception of a particular issuer that NOC is exposed to
  - Measured by contribution to duration

(b) NOC has a fiduciary responsibility to exhibit due diligence in its manager selection process. The first step in the manager selection process involves identifying managers whose style and investment strategy align with NOC's goals. In particular, only those managers with proven expertise actively managing fixed income portfolios should be considered. NOC should establish standardized criteria for ranking the managers in consideration while realizing that historical performance is not necessarily an indicator of future performance. More importantly, NOC should look for a consistent and logical investment process. There are a number of particular things NOC should consider including in its assessment of prospective managers:

- Quantitative analysis of historical performance
  - Was alpha achieved consistently
  - Consider running factor attribution of risk and returns
- Qualitative analysis
- Fee analysis

9. Continued

- Feedback from clients, competitors, and suppliers
- Should NOC utilize a consultant in the search process
  - Consultants are experienced at evaluating managers and can offer unbiased recommendations; however the cost of using a consultant can reduce or eliminate alpha

NOC should consider using a three step-process once it has identified a short list of final candidates:

- Collect information through a detailed questionnaire
- Conduct interviews
- Perform a final evaluation

On-site meetings with prospective managers can be useful for assessing intangible criteria:

- Culture
- Team interaction
- Hierarchy

NOC should also collect information on the experience of the investment team, how long the team has been together, and the depth of resources.

10. Learning Objectives:

2. The candidate will be able to evaluate sponsor's goals for the retirement plan.

7. The candidate will be able to evaluate the sponsor's financial goals and risk management with respect to their plan.

11. The candidate will be able to analyze the issues facing retirement plan sponsors regarding investment of fund assets and make recommendations on the actuarial issues.*

*Note: the candidate is not expected to provide advice on investment of plan assets

Learning Outcomes:

(2a) Describe the agency relationship between management of the sponsor and its shareholders or taxpayers.

(2b) Compare the, sometimes conflicting, interests of management, employees, shareholders or taxpayers (in the case of public sector).

(7e) Describe how retirement plan accounting impacts the sponsor's overall financial results.

(11a) Assess the different types and combinations of investment vehicles for providing retirement benefits given the particulars of the sponsor's financial circumstances, philosophy, industry, workforce and benefit package.

Sources:

R-C105-07: Pension Actuary's Guide to Financial Economics

R-C106-07: The Case against Stock in Public Pension Plans (Bader, Gold), Working Paper, 2004

R-C138-09: The Case for Stock in Pension Funds, Contingencies Jan/Feb 08 http://www.contingencies.org/janfeb08/trade.pdf

R-C142-10: Bader and Gold's Rebuttal to The Case for Stock in Pension Funds, Contingencies March/April, 2008

The Good, The Bad and the Ugly, Pension Section News, September 2008, issue 68

Can pensions Be Valued as Marketed Securities, Bader, Pension Section News, June, 2009

R-C146-10: In Support of the Weatherman, Mindlin

10. Continued

R-C136-08: Selection of Valuation Interest Rates for Funding Valuations of Pension Plans – Traditional Pension Plan Approach Vs. Financial Economics Approach

Commentary on Question:
Candidates were asked to apply their understanding of financial economics to answer this question based on several of the readings from the source material. No credit was given for outlining or listing the general concepts of financial economics that did not specifically answer the question. The ideal response was centered around the "Law of One Price" with detailed explanations of supporting and opposing arguments for the law.

Solution:
Supporting Arguments
The CFO supports the financial economics view that pensions are similar to market instruments and therefore have a market value.

- The Law of one price says,
    - Two financial instruments that generate identical cash-flows (in terms of timing, magnitude and likelihood) and tradable in an efficient market must have the same price
        - Otherwise, there's an arbitrage opportunity which can't exist in an efficient market and therefore could be exploited
- Pension liability should be valued at the price at which a reference security trades in liquid and deep market
- The reference security is most likely a bond portfolio that produces cash-flows that match pension plan's liability (projected payments) in:
    - Amount
    - Timing
    - Probability of payment
    - The discount rate should therefore be nearly riskless for well funded plans or strong plan sponsors as the probability of payment is very high in these cases
    - The discount rate should not include an equity risk premium
    - *Note: credit also given if candidate made reference to replicating bond portfolio*
- Asset allocation does not (should not) impact the value of the liability
    - Equity investors realize gains after higher returns have been earned - not just when they are expected
    - Two companies that are identical in every way except for pension asset allocation should not have different liabilities
    - Investing in equities in the pension plan does not create shareholder value because shareholders can invest in equities themselves
- Financial economics would treat ABO as economic pension liability
    - Only accrued benefits are economic liabilities, future pay increases are not a current economic liability

10. Continued

- Current accounting or funding liabilities are moving towards market value measures (result of recent US legislation)
- Financial Economics takes view that pensions are form of corporate debt
  - Plan sponsor is borrower, plan members are lender

Opposing Arguments

The traditional actuarial view opposes the financial economics view in some respects.

- Pensions don't trade in financial markets and should not be valued like traded security
  - Better to call the "market value of liability" the cost of termination - since pensions don't trade on a market
- Since pricing pensions differently doesn't create arbitrage opportunities, law of one price does not apply
- Cash flows for pensions differ from bonds because they are contingent on things that do not affect ordinary bonds:
  - Future pay increases
  - Demographics
  - Mortality

[Note that the financial economics view would critique the traditional actuarial view regarding the uncertainty of projected payments by saying that the traditional view prices pensions as if the projected payments are certain anyway. Also, financial economics would not include pay increases in the liability.]

- It is very difficult to assess the probability of payment (the appropriate discount rate is a function of sponsor strength among many other things)
- Equity risk premium exists according to history, so to ignore it for a long-term vehicle like a pension plan seems wrong
- Debt model for valuing pension liabilities has some limitations:
  - Duration of pension liabilities is greater than bonds available (i.e., refer to maturity of bond market)
  - Debt market may not be sufficient to cover all cash-flows (i.e., can't match cash-flows exactly)
- Current accounting or funding liabilities are not in harmony with financial economics in several respects so it seems there is disagreement about the correct way to value pension liabilities indicating there is no true market value
  - Although, financial economics advocates believing accounting and funding rules would benefit from closer adherence to the principles of financial economics
  - Traditional actuarial view concedes that while there is no true market value, economic value is a useful benchmark for exploring a host of pension issues
  - Examples:
    - Effect of pension plan on financial condition of sponsor
    - Cost of possible plan improvements

10. Continued

- Other arguments against Financial Economics: inability to measure and manage plan's riskiness
  - Use of a bond-like rate only makes sense if the plan is invested in bonds otherwise the measure conceals risk
  - Pension liabilities are a risk measurement, not a known value measurement - so requires assumptions about future
- Liabilities could be valued at annuity purchase price available at high quality insurance company, this would seem to present a different "economic value" than the financial economics view, and since there cannot be two different market values simultaneously it would seem that there isn't a unique single market value for pension liabilities

11. Learning Objectives:

8. The candidate will be able to recommend and advise on the financial effects of funding policy and accounting in line with the sponsors' goals, given constraints.

Learning Outcomes:

(8d) The candidate will be able to advise plan sponsors on accounting costs and disclosures for their retirement plans.

Sources:

Employee Future Benefits – Additional Disclosures, Background Information and Basis for Conclusion, Includes Section 3461 from the CICA Handbook (omit pp. 1-21, 29-34, 111-115)

R-C103-09: Comparison of IAS 19 with FAS 87/88/106/132R/158, CICA 3461 and FRS 17 – Summary of Provisions Affecting Accounting for Post Retirement Benefits, Towers Perrin)

R-C615-10: "Transition from Canadian GAAP to IFRS – Issues for Pension and Other Post-Retirement Benefit Plan Sponsors" by Geoffrey M. Gibson

Commentary on Question:

This question asked candidates to demonstrate an understanding of the differences between Canadian GAAP and IFRS accounting for *Employee Future Benefits*, as well as the transition rules to be followed for Canadian public companies.

For part (b), successful candidates focused their responses on the technical differences between the two standards as applied to the plan sponsor's 2010 pension expense calculation.

Solution:

(a) 2 options available at the transition date (1/1/2010):

1. Apply IFRS retroactively since the plan inception

2. Under IFRS 1, apply the exemption and recognize all cumulative gains or losses, except prior service costs that are not fully vested in Retained Earnings

Whatever option is elected, must be applied to all employee benefit plans

(b)

- Measurement date: under CICA it is 9/30, under IFRS it must be 12/31
  - Discount rate could be different
  - Obligation, service cost and interest cost could be different

11. Continued

- Expected Return on Assets will be different
  - CICA – based on market-related value of assets
  - IFRS – must be based on fair value of asset
  - Different measurement date will also have an impact

- Past service cost
  - CICA – the 4/1/2010 amendment will be amortized over EARSL
  - IFRS, the vested amount will be recognized immediately, and the non-vested amount will be amortized over the "vesting period"

- Actuarial gains or losses
  - CICA – the amount in excess of the 10% corridor is amortized over EARSL
  - IFRS – ABC could choose to:
    - Recognize them in the expense with the use of the 10% corridor
      - If option 2 in (a) is elected, $0 to amortize in 2010 expense
    - Immediately recognize them in OCI, in which case $0 will be recognized in the 2010 expense

- Net transitional obligation/asset
  - If ABC has some under CICA, there will be an amortization amount
  - Under IFRS, no amount to recognize due to immediate recognition

- Curtailment – timing of recognition and measurement will be different
  - The termination of 1,000 employees will result in a curtailment under both CICA and IFRS
  - CICA – timing depends on whether a curtailment gain or loss is expected. A loss is recognized when probable and reasonably estimable. A gain is recognized when the event occurs in 2011, so no impact in 2010.
  - IFRS – curtailment gains or losses are recognized when it occurs in 2010
  - CICA – recognized unamortized past service cost based on reduction in future years of service
  - IFRS – recognized unamortized past service cost and unamortized actuarial gains/losses based on the change in the obligation

- The impact of the asset ceiling on the expense is calculated differently under CICA and IFRS

12. Learning Objectives:

7. Evaluate the sponsors' financial goals and risk management with respect to their plan.

11. Analyze the issues facing retirement plan sponsors regarding investment of fund assets and make recommendations on the actuarial.

Learning Outcomes:

(7a) Describe ways to work with the sponsor on identifying and prioritizing the goals of management and shareholders related to the financial management of their retirement plan.

(7b) Compare the, sometimes conflicting, interests of management, employees, shareholders or taxpayers (in the case of public sector).

(11d) Assess the potential effects of various investments and investment policies on plan funding, accounting, design and administration.

Sources:

R-C609-07: CASPA Guidelines #3 - CAP Guidelines

Can. Pensions and Retirement Income Planning, Wyatt, page 378-380

General references to CAP plan designs/DC plans in syllabus/understanding of concept

Commentary on Question:

This question specifically targeted non-investment risks only. Many candidates answered this question with a long list of "risks" - nothing else, no further explanations. The list usually included investment related risks as well; contrary to the question being asked. The intent was for candidates to synthesize the best practices outlined in the Guideline and relate them back to how they were effective or not effective.

Example: fees too high: the risk is members having reduced retirement funds due to fees paid over the years being too high. This is identified under the CAP Guidelines in sections that require fee disclosure. Since Guidelines require that description and amount of fees is to be disclosed the Guidelines do provide some protection to members and could be considered somewhat effective. Some candidates went further to say that Guidelines were not effective enough and should require more disclosure or even maximum limits on fees.

12. Continued

Solution:
Sponsors implementing plan and not doing properly/poor governance/fiduciary responsibilities not followed

- CAP guidelines are best practices only; not legally bound to follow/no safe harbor so members not necessarily protected
- Sponsors should consider obtaining qualified advice if they do not possess the required knowledge - reduce risk of poor governance of plan

Fees too high - will reduce retirement funds for members

- Higher fees lower chance of meeting retirement goals
- Ees should be given description and amounts of fees - record keeping or service provider fees or other expenses

Inadequate information provided to members

- Sponsors must initially provide info - nature and features of CAP; rights and responsibilities of members
- Sponsors must provide ongoing communication/education
- Sponsor should provide proper decision making tools - e.g.: retirement planning tool
- Decisions made by members (or lack thereof) could result in lower ret savings

Information/education provided is not understandable

- Information provided must be in plain language; formatted for readability and comprehension
- Misunderstood information could result in poor results and reduce retirement savings
- If members not reminded to join in voluntary plan they are losing potential of retirement savings/compounding from younger years

Third party administrators - access, capabilities

- Sponsor can delegate responsibilities for providing administrative/investment services to a third party
- Sponsor is responsible for reviewing performance of the professional they use
- Sponsor must review and document the criteria for termination of contract with provider
- What access to resource/education materials is being provided - are members able to be educated as required

12. Continued

Design of Plan - past and future

- Sponsors must discuss and document discussions of plan changes
- Any modifications must be communicated to members
- Risk of no future revisit of plan design so company not confirming whether retirement needs actually being met
- Risk of plan not functioning properly - original purpose of plan no longer applicable for current demographics
- Risk of plan not functioning properly - specific plan features not fulfilling purpose to assist members to achieve retirement needs

13. Learning Objectives:

10. The candidate will be able to analyze the regulatory environment as it effects retirement plans.

Learning Outcomes:

(10a) Evaluate the effect of regulatory policies and restrictions, for all retirement plans, associated with:

- Plan design
- Plan establishment
- Plan amendment
- Plan termination/wind-up
- Plan merger or spin-off
- Reporting requirements
- Members' rights
- Plan funding
- Contributions and benefits
- Individual savings plans
- Coordination of individual and employer sponsored retirement plans
- Economic value to shareholders

Sources:

R-C102-07: Turner/Watanabe, *Private Pension Policies in Industrialized Countries*, Chapter 5, pp 65-81

R-C606-07: OSFI Guidelines for converting DB to DC

R-C121-07: "Converting Pension Plans from a Defined Benefit to a Defined Contribution Design – Issues to Consider in Canada", Genno

Commentary on Question:

Part (a) of this question requires the candidate to describe the OSFI and CRA requirements in setting the conversion basis. Credit was not given for listing the steps of the conversion process since the question did not ask for this.

Part (b) requires the candidate to describe, for each conversion assumption that may be selected by Maple Bank, how such assumptions would impact the desirability for the members of converting vs. not converting.

13. Continued

Solution:

(a) OSFI requires:

- The value of converted benefits must be at least equal to the member's transfer value, based on the CIA recommendations for the pension commuted values ("CIA Commuted Value Basis") and calculated as if the member had terminated at conversion.
- Economic assumptions are at least as favorable as specified in the CIA Commuted Value Basis.
- Conversion values should recognize all benefits provided under terms of plan.

The conversion could not reduce benefits already earned up to conversion.

- Must include ancillary benefits (bridge, subsidized early retirement, refund of excess contributions) for members who had met the requirements.
- For members not entitled to an ancillary benefit, conversion values should account for the possibility that, had the plan remained unchanged, they might have subsequently qualified.

Value of benefits tied to best average earnings must be calculated with a projection of salaries.

- Rate of future salary increases should be consistent with the economic assumptions used to calculate the conversion value.
- Reasonable termination and retirement rates can be used in the projection of salaries.

PBSA allows the use of sex distinct mortality tables.

The assumptions used to calculate the commuted values and to project salaries must be reasonable and acceptable to the CRA.

(b) Salary assumption:

- Must include salary projections when calculating the conversion value
- Risk to members keeping DB for past service is that their actual salaries may be less than the salary increases assumed in determining the conversion values
- Risk to members converting is that their actual salaries may be greater than the assumed salaries used in determining the conversion values

Early retirement assumptions (retirement age):

- Conversion value calculation can include retirement scales
- Risk to members keeping DB for past service is that if they terminated prior to qualifying for early retirement, they would receive a commuted value less than what their conversion value would have been
- Risk to members converting is that their conversion value may be understated if they retire later than assumed retirement age

13. Continued

Interest rate assumptions:

- Conversion value calculation must include the interest rate assumption for computing retirement annuities
- Risk to members keeping DB for past service is that if they terminated shortly after conversion or when interest rates are higher than assumed, their commuted value of termination benefits could be less than their conversion value
- Risk to members converting is that their conversion value may earn less than the expected investment returns

Normal form (married assumptions):

- Conversion value calculation should include an assumption on percentage married at retirement
- Risk to members keeping DB for past service is that if they are single at retirement, their DB pension would only be paid as a life 5 pension
- Risk to members converting is that if they are married at retirement, their conversion value would have been understated if the percentage married assumption is less than 100%

Indexing assumption:

- No indexing assumption is required for conversion value calculation
- Risk to members keeping DB for past service is that they may or may not receive future indexing increases on their DB pension
- Risk to members converting is that they would not receive any future ad hoc increase

Termination assumptions

- Conversion value calculation can include termination scales
- Risk to members keeping DB for past service is that if they terminated earlier than expected, their termination commuted value could be less than what their conversion value would have been
- Risk to members converting is that their conversion value may be understated if they terminated later than expected or do not terminate at all

Mortality assumptions:

- Conversion value calculation can include pre-retirement mortality assumption
- Conversion value calculation must include post-retirement mortality assumption for computing annuities
- Risk to members keeping DB for past service is that if they died prior to 2 years of membership, they would not receive any benefits
- Risk to members converting is that their conversion value may be understated if they lived longer than expected