RET DAC Model Solutions
Spring 2021

1. Learning Objectives:

4. The candidate will be able to evaluate plan design risks faced by sponsors of retirement plans and retiree health plans.

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

9. The candidate will be able to apply the standards of practice and guides to professional conduct.

Learning Outcomes:

(4c) Recommend ways to mitigate the risks identified with a particular plan feature

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

(9d) Demonstrate compliance with requirements regarding the actuary's responsibilities to the participants, plan sponsors, etc.

Sources:

DA-187-21: ASOP 51- Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Contributions

Pension Risk Transfer: Evaluating Impact and Barriers for De-Risking Strategies, pp. 16, 17 & 20-27

DA-168-19 IFRS and US GAAP Similarities and Differences, Ch 5

Commentary on Question:

In general. the candidates who were familiar with ASOP 51 were able to describe the risks and methods to assess these risks. Not all candidates seemed to be familiar with this relatively new ASOP. To receive full credit in parts c) & d), candidates needed to identify appropriate risk transfer strategies and correctly describe the accounting treatment of the chosen strategies.

1. Continued

Solution:

(a) Describe the risks an actuary should disclose in a valuation report based on Actuarial Standard of Practice No. 51, Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions (ASOP 51).

Commentary on Question:
To receive full credit, candidates needed to describe four separate risks noted in ASOP 51. The model solution below is not a comprehensive list of risks; candidates also received credit for other relevant answers.

The actuary should identify risks that, in the actuary's professional judgment, may reasonably be anticipated to significantly affect the plan's future financial condition.

Examples of risks which should be disclosed include the following:

- Investment risk: the potential that investment returns will be different than expected;
- Asset/liability mismatch risk: the potential that changes in asset values are not matched by changes in the value of liabilities;
- Interest rate risk: the potential that interest rates will be different than expected;
- Longevity and other demographic risks: the potential that mortality or other demographic experience will be different than expected.

(b) Identify the methods for assessing the risks described in part (a) based on ASOP 51.

Commentary on Question:
Most candidates were able to identify the different methods for this part of the question.

Methods to assess risk may include:

- Scenario tests,
- Sensitivity tests,
- Stochastic modeling, stress tests, and
- A comparison of an actuarial present value using a discount rate derived from minimal-risk investments to a corresponding actuarial present value from the funding valuation or pricing valuation.

1. Continued

The actuary should take into account the degree to which the methods and models reflect the nature, scale, and complexity of the plan. In using professional judgment, the actuary may take into account practical considerations such as usefulness, reliability, timeliness, and cost efficiency

(c) Recommend two pension risk transfer strategies available to Company XYZ.

Justify your response. No calculations required.

Commentary on Question:
Most candidates correctly identified at least one pension risk transfer strategy available to Company XYZ; candidates needed to recommend two different strategies in order to receive full credit. The model solution below is not an exhaustive list of all possible strategies; candidates also received credit for recommending other relevant strategies and justifying their response.

1. **Provide a lump sum offering to a group of participants (ex. terminated vested participants)**
   - Bulk lump sum offerings typically occur when traditional plans allow a group of participants a one-time, limited opportunity to elect to receive their benefits in the form of a lump sum distribution (usually referred to as a "window election").
   - Such plans may not offer participants the option to receive their retirement benefits as a lump sum after the defined window.
   - Paying out lump sum benefits transfers all risk from the pension plan to the electing participants, as well as eliminating corresponding fees associated with maintaining the liabilities
   - A lump sum window may be a way to begin a larger pension risk transfer (PRT) strategy or can be simply a point solution to eliminate a certain amount of risk and liability on a relatively inexpensive basis.

2. **Purchase a group annuity for a group of participants (commonly referred to as a "buy-out")**
   - A plan sponsor enters into a contract with an insurer to take on the remaining pension obligations for some of the plan's population, usually a group of retirees
   - The plan sponsor will transfer the existing pension liability for this group to the insurer for a single premium.
   - The insurer's group annuity contract is usually sold at a higher cost than the DBO under IAS 19

1. Continued

- In return, the plan no longer has responsibility for future benefits payments to plan participants or the corresponding fees associated with maintaining the liabilities.

(d) Compare and contrast the accounting treatment of each strategy identified in part (c) under:

(i) U.S. Accounting Standard ASC 715

(ii) International Accounting Standard IAS 19, Rev. 2011

No calculations required.

Commentary on Question:
Most candidates who identified correct risk transfer strategies in part c) were able to explain the accounting treatment of the strategies under both accounting standards. The model solution below corresponds with the above model solution for part (c); candidates also received credit if they were able to correctly answer the question for other strategies they listed in part (c).

Lump Sum Offerings	
IAS-19	ASC 715
Triggers settlement accounting; there is no material threshold. Any settlement payments due to lump sum elections by employees as part of the normal operating procedures of the plan are excluded from settlement accounting calculations.	Triggers settlement accounting if settlement price exceeds the sum of Service cost + Interest cost.
Settlement gain/loss from the lump sum paid to the participant will be recognized immediately through the profit and loss.	Settlement gain/loss from the lump sum paid to the participant will be recognized immediately in OCI.
	Portion of unrecognized g/l will be recognized immediately through profit and loss as the pro rata share of the settlement to the overall liabilities of the plan.
The pension obligation settled is removed from the DBO and the assets are paid to the participant as a lump sum.	The pension obligation settled is removed from the PBO and the assets are paid to the participant as a lump sum.

1. Continued

Annuity buy-out	
IAS-19	ASC 715
Triggers settlement accounting. There is no materiality considerations for the settlement (threshold).	Triggers settlement accounting if settlement price exceeds the sum of Service cost + Interest cost.
Settlement gain/loss from the premium paid to the insurer will be recognized immediately through the profit and loss.	Settlement gain/loss from the premium paid to the insurer will be recognized immediately in OCI
	Portion of unrecognized g/l will be recognized immediately through profit and loss as the pro rata share of the annuity buy-out to the overall liabilities of the plan.
The pension obligation settled is removed from the DBO and the assets are transferred to the insurer.	The pension obligation settled is removed from the PBO and the assets are transferred to the insurer.

2. Learning Objectives:

1. The candidate will be able to analyze different types of registered/qualified retirement plans and retiree health plans.

3. Candidate will be able to analyze the risks faced by retirees and the participants of retirement plans and retiree health plans.

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

Learning Outcomes:

Describe the structure of the following plans:

- (a) Traditional defined benefit plans
- (b) Defined contribution and savings plans
- (c) Hybrid Plans
- (d) Retiree Health plans
- (e) Other alternative retirement plans such as share risk plans, target benefit plans, etc.

(3a) Identify risks faced by retirees and the elderly.

(3b) Describe and contrast the risks face by participants of:

- (i) Government sponsored retirement plans
- (ii) Single employer sponsored retirement plans
- (iii) Multiemployer retirement plans, and
- (iv) Social insurance plans

(3c) Evaluate benefit adequacy and measure replacement income for members of a particular plan given other sources of retirement income.

(3d) Propose ways in which retirement plans and retiree health plans can manage the range of risks faced by plan participants and retirees.

(8a) Perform valuations for special purposes, including:

- (i) Plan termination/windup
- (ii) Accounting valuations
- (iii) Open group valuations
- (iv) Plan mergers, acquisitions and spinoffs

(8c) Demonstrate how the retirement plan's cash inflows and outflows can affect the plan sponsor.

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

2. Continued

Sources:
DA-161-16: Pension Issues in Mergers and Acquisitions

DA-169-17: Mergers and Acquisitions: Key Considerations for Retirement Plan Conversion

Commentary on Question:
Commentary listed underneath question component.

Solution:
(a) Analyze the impact of the three options on the following:

(i) Accounting cost to the merged company

(ii) Administrative cost to the merged company

(iii) Disruption to current employees

Commentary on Question:
The question asked for an analysis of the three options, not to compare and contrast them against each other; many candidates listed comparison points of the options against each other. Further, the question asked for the accounting cost and administrative cost to the merged company; some candidates focused their responses on the addition of Plan X, as opposed to focusing on costs before and after the creation of the merged company.

Option 1 – no change
Accounting Cost:
- no change to the accounting cost to the company
- DC expense for Plan A is straight forward and simply equal to contributions
- DB expense for Plan X will continue to be based on annual valuations (or extrapolations) at year end measurement dates under accounting statement

Administrative Cost:
- minimal additional cost (compared to before the merger) since no changes required to plans (plan changes are expensive and time consuming).
- Only thing likely required is communication related to new entity (name changes, etc.).
- Ongoing, company will need to have two plan government filings, different retirement packages and other required communications, so more time consuming.

Disruption:
- low since everything is as it was before merger related to pension plans.
- However, need to consider the potential effects on employee morale - perception of fairness (one may be perceived as superior than the other based on an employee's perception of performance of plans, different risk of DB vs DC plans, different forms of payment and death benefits payable).

2. Continued

Option 2 – freeze X (DB), future accruals all in A (DC)

Accounting Cost:

- Curtailment accounting for Plan X due to the freezing of benefits. If X is a final average earnings (FAE) plan, likely to be a gain due to the decrease in PBO to ABO
- No future service costs going forward in Plan X since no future accruals
- DC expense for Plan A is simply the increased contributions going forward covering both member populations

Administrative Cost:

- can be expensive - costs are required to freeze plan X benefits and enroll all those members into plan A (plan amendments, participant communication, etc).
- However, going forward, plan A is less costly to maintain overall, being a DC plan.
- Also, Plan X will likely be less costly to maintain than before, now being a closed plan.

Disruption:

- Plan X members may not be happy to lose benefit security of DB plan and forced change.
- DB plan accruals usually more valuable at end of career near retirement so Plan X members will lose out on this.
- Also, employees currently in Plan X will receive benefits from two separate sources, and total benefit is likely reduced.

Option 3 – employee choice & if move to A, convert past service

Accounting Cost:

- Some members in Plan X will elect to enroll in Plan A and convert past benefits to Plan A:
    - There will likely be a curtailment/settlement gain (assuming an FAE plan) for Plan X as they will no longer have future accruals under Plan X, and will be transferring liability (settling the liability on a specific measurement date) to Plan A
    - Future service costs would be zero for these members (total service cost for Plan X will decrease going forward)
- Some members in Plan X will elect to stay in Plan X, so there will continue to be service cost and interest cost in this plan, but at reduced levels
- Expect anti-selection to increase total costs since employees will pick option most beneficial to themselves

Administrative Cost:

- expensive. Communication requirements to give members the option to convert (likely running projections with scenarios to assist with choice, hosting employee education sessions, etc.), actual process of collecting employee choice and doing the conversion.
- More ongoing maintenance too, since 2 open plans to manage (one of which is DB).

2. Continued

Disruption:
- XYZ members will be happy to have the option to pick the plan best for their circumstance.
- No changes for ABC members.
- from an employee perspective, this may be a best case scenario with least disruption.

(b) Recommend which plan the following employees should choose:

(i) 30-year old with one year of service in Plan X

(ii) 55-year old with 25 years of service in Plan X

No calculations required. Justify your response.

Commentary on Question:
For employee (i), quite a few candidates provided points for both options and did not recommend one over the other; these candidates did not receive full credit since they were asked to recommend one option. For employee (ii), the majority of candidates recommended to stay in Plan X, however they had difficulty articulating why – many solutions focused on why not Plan A, as opposed to highlighting the benefits of staying in Plan X. The model solution below highlights a sample recommendation; credit was also given if candidates recommended the other option with proper justification.

(i) Young employee – recommend converting to Plan A
- fairly new in Plan X where benefits are likely not material yet
- DC is better for portability for a more mobile work force (this employee is fairly new at this company and may not become a career employee, especially considering the merger may change company culture)
- potential investment choice in the DC plan

(ii) Older employee – recommend staying in Plan X
- not too far from retirement age, likely not changing jobs until retirement
- even if company culture changes for the worse due to acquisition, can consider retiring early with a more secure benefit in Plan X (DB benefit has better security for employee)
- Want to maximize any early retirement subsidies which may be available from DB plan, which are dependent on age and service

3. **Learning Objectives:**

1. The candidate will be able to analyze different types of registered/qualified retirement plans and retiree health plans.

2. The candidate will understand the impact of the regulatory environment on plan design.

3. Candidate will be able to analyze the risks faced by retirees and the participants of retirement plans and retiree health plans.

Learning Outcomes:

Describe the structure of the following plans:

(a) Traditional defined benefit plans
(b) Defined contribution and savings plans
(c) Hybrid Plans
(d) Retiree Health plans
(e) Other alternative retirement plans such as share risk plans, target benefit plans, etc.

Given a plan type, explain the relevance, risks and range of plan features including the following:

(a) Plan eligibility requirements
(b) Benefit eligibility requirements, accrual, vesting
(c) Benefit/contribution formula, including the methods of integration with government-provided benefits
(d) Payment options and associated adjustments to the amount of benefit
(e) Ancillary benefits
(f) Benefit subsidies and their value, vest or non-vested
(g) Participant investment options
(h) Required and optional employee contributions
(i) Phased retirement and DROP plans
(j) Risk-sharing provisions

(2a) Explain and apply restrictions on plan design features to a proposed plan design.

(2b) Explain and test for limits on plan designs and features that protect participation rights.

(3a) Identify risks faced by retirees and the elderly.

(3c) Evaluate benefit adequacy and measure replacement income for members of a particular plan given other sources of retirement income.

(3d) Propose ways in which retirement plans and retiree health plans can manage the range of risks faced by plan participants and retirees.

3. Continued

Sources:
The Retirement Forum, April 2019, Volume 22, Number 1

Managing Post Retirement Risks: Strategies for Secure Retirement, 2020

DA-174-18: An Improved Application of the Variable Annuity

Commentary on Question:
Part (a) asked for a description of the UBC variable payment life annuity. Most candidates were able to accurately describe the concept of VPLA. Few candidates provided specifics of the UBC VPLA, despite a detailed discussion in the study materials.

Part (b) asked for a description of three risks of the VPLA option, and this part was generally answered well.

Part (c) asked students for sponsor actions to minimize risks. It was answered well with many candidates suggesting modifications to the VPLA to address the risks identified in (b).

Solution:
(a) Describe the features of the Variable Payout Life Annuity (VPLA) option in the University of British Columbia Faculty Pension Plan (UBC FPP).

Commentary on Question:
Candidates provided in general a basic description of the VPLA, but most failed to provide the specifics of the UBC FPP. Points were credited toward valid descriptions of VPLA, even when omitting important details of UBC FPP.

General concepts for variable annuities
VPLA is a payout option for retirees

Active employees participate in a traditional DC plan during the accumulation phase

Single premium life annuity whose payouts are adjusted each year based on the mortality and investment experience of the group of annuitants relative to an assumed investment return (AIR) and a specific mortality table

Actual benefits may increase or decrease year to year

Full impact of gains and losses is passed on to pensioner every year

No guarantee of benefit stability

3. Continued

Retirees buy units in the VA with their accumulated balance at retirement

Defined benefit-like feature to produce a stable income stream for retirees, while maintaining the cost stability associated with DC arrangements

Specific to UBC
Two variants offered: one with a 7 % AIR and another with a 4 % AIR

Both variants are invested in the same underlying balanced fund

Based on current projections, the 7% option is expected to produce a decreasing income stream, and the 4 % option is expected to produce an increasing income stream over time

Benefit security, meaning "likelihood of maintaining initial benefit" depends on the AIR and is relatively low for the 7 % AIR option

(b) Describe three risks of the VPLA option from the perspective of plan participants.

Commentary on Question:
This part was answered well by most candidates, and there were many possible answers. Mentioning more than three risks did not generate extra credit. Credit was given if candidates mentioned risks not shown below as long as the explanations applied to the context of the VPLA.

Inflation - Retirees, especially those living on a fixed income, need to be concerned about increasing costs in retirement.
VPLA Impact: income may stay flat or decrease and cause loss of purchasing power.

Financial Markets - Stock and bond prices vary depending on how well a specific financial company, the financial industry, and the economy are doing.
VPLA Impact: income may decrease if poor investment performance.

Longevity - means living a long life, but it also increases the chance of running out of adequate resources. Retirement planning requires having assets and a flow of income to last through retirement.
VPLA Impact: Lower than expected mortality will result in decrease of income

3. Continued

(c) Recommend actions a plan sponsor could take to minimize the risks identified in part (b) above.

Justify your response.

Commentary on Question:
Mentioning more than three risks did not generate extra credit. Many candidates mentioned items that applied to multiple risks separately and received credit for each risk. The model solution shown is not an exhaustive list of actions a plan sponsor could take. Credit was given for other accurate plan sponsor actions that related to risks identified by candidates in part (b).

Inflation
Invest in assets that have historically grown in value during times of inflation
Invest in assets that incorporate inflation protection
Explore annuities with built-in inflation protection
Keep a reserve to cover shortfalls instead of lowering income

Financial Markets
Sponsor should use diversification
Minimize fees and administration expenses
Monitor investment performance
Apply a floor rate of return to cover downside risk

Longevity
Select mortality table that closely reflect group experience
Consider mortality adjustment based on previous year gain or loss
Suggest that participant consider delaying public pensions to receive higher income
Purchase longevity hedging product to manage decreases caused by mortality losses

4. **Learning Objectives:**

1. The candidate will be able to analyze different types of registered/qualified retirement plans and retiree health plans.

3. Candidate will be able to analyze the risks faced by retirees and the participants of retirement plans and retiree health plans.

4. The candidate will be able to evaluate plan design risks faced by sponsors of retirement plans and retiree health plans.

Learning Outcomes:

Describe the structure of the following plans:

(a) Traditional defined benefit plans
(b) Defined contribution and savings plans
(c) Hybrid Plans
(d) Retiree Health plans
(e) Other alternative retirement plans such as share risk plans, target benefit plans, etc.

Given a plan type, explain the relevance, risks and range of plan features including the following:

(a) Plan eligibility requirements
(b) Benefit eligibility requirements, accrual, vesting
(c) Benefit/contribution formula, including the methods of integration with government-provided benefits
(d) Payment options and associated adjustments to the amount of benefit
(e) Ancillary benefits
(f) Benefit subsidies and their value, vest or non-vested
(g) Participant investment options
(h) Required and optional employee contributions
(i) Phased retirement and DROP plans
(j) Risk-sharing provisions

(3a) Identify risks faced by retirees and the elderly.

(3b) Describe and contrast the risks face by participants of:

(i) Government sponsored retirement plans
(ii) Single employer sponsored retirement plans
(iii) Multiemployer retirement plans, and
(iv) Social insurance plans

(3d) Propose ways in which retirement plans and retiree health plans can manage the range of risks faced by plan participants and retirees.

(4a) Identify how plan features, temporary or permanent, can adversely affect the plans sponsor.

4. Continued

Sources:
CIA Ed Note: Financial Risks Inherent in Multi-Employer Pension Plans and Target Benefit Pension Plans, CIA TF on MEPP/TBPP Funding, May 2011

Morneau Shepell Handbook of Canadian Pension and Benefit Plans 16th Ed. Ch 1

Morneau Shepell Handbook of Canadian Pension and Benefit Plans 16th Ed. Ch 11

Commentary on Question:
This question tests candidates' knowledge of the plan design, specifically the risk sharing structure between employees and employers, of Multi-Employer Pension Plans, Single Employer Defined Contribution Pension Plans, and Single Employer Defined Benefit Pension Plans. Further, it tests candidates' knowledge on underlying risks present in Multi-Employer Pension Plans and potential investment strategies to mitigate these risks.

Solution:
(a) Compare and contrast a Multi-Employer Pension Plan's (MEPP) risk sharing structure to the risk sharing structure of the following:

(i) Single employer defined contribution pension plan

(ii) Single employer defined benefit pension plan

Commentary on Question:
Overall, candidates successfully compared and contrasted the risk sharing structure of these different plan designs.

(i) **MEPP & Single Employer Defined Contribution Plan (DC Plan)**

- Risk sharing structure of a MEPP and DC Plan are similar.
- **Risks Borne by -** In MEPPs and DC Plans, risks are borne by the members. Members' benefits can be reduced in a MEPP and members' account balances can decrease in a DC Plan.
- **Risk Pooling -** MEPPs pool risks among members (i.e., longevity risk, investment risk, etc) whereas there is no pooling of risk in a DC Plan.
- **Costs -** MEPPs and DC Plans both have known costs for the employers.
- **Contributions -** In MEPPs and DC Plans, the employer risk is limited to the negotiated or promised contribution rate.

4. Continued

(ii) **MEPP & Single Employer Defined Benefit Plan (DB Plan)**

- Risk sharing structure of a MEPP and DB Plan is significantly different.
- **Risks Borne by -** In MEPPs risks are borne by the members, whereas the employer bears the risks in a Single Employer DB Plan. Members' benefits can be reduced in a MEPP, but plan sponsors cannot reduce accrued benefits in a DB Plan.
- **Risk Pooling -** Both MEPPs and Single Employer DB Plans pool risks among members (i.e., longevity risk, investment risk, etc).
- **Costs -** MEPPs have known costs for the employers, whereas in Single Employer DB Plans, the employer pays the balance of unexpected costs
- **Contributions -** In MEPPs, the employer risk is limited to the negotiated contribution rate, whereas plan sponsors for DB Plans contribute based on the plan provisions and remit any additional funds required to meet minimum funding requirements.

(b) Propose three investment strategies to mitigate risks in a MEPP.

Justify your response.

Commentary on Question:
Overall, candidates were able to generally identify investment strategies but failed to adequately justify their responses. This resulted in partial credit being awarded. Many candidates proposed assumption or plan design changes for this question and were not awarded points for those types of answers.

Candidates were also given credit for relevant investment strategies not mentioned below, such as portfolio diversification.

Reducing the equity allocation:

- Plans typically want to provide inflation protection; equities do not have good inflation matching characteristic.
- Trustees may want to consider alternative asset classes with reasonable inflation matching characteristics and traditionally lower volatility. Asset classes with these characteristics include:
  - Real return bond coupons: by their design, match inflation extremely well.
  - Real estate holdings have some inflation protection matching characteristics.
  - Infrastructure has exhibited better inflation matching than real estate.
- Reducing equity allocation may reduce risk in the plan, but the asset allocation is directly linked to the actuarial assumption for future returns and could result in increased cost.

4. Continued

Increasing the duration of fixed income assets:

- Helpful when the dollar duration of the plan's liabilities exceeds that of the plan's assets.
- The plan's asset allocation would be considered directly in setting the actuarial assumptions for future rates of return.
- Increase the duration of fixed income assets to better match the long-term payment streams to pensioners.
- Where managing the asset/liability mismatch risk is a key driver, asset allocation may focus on matching of expected plan liability cash flows, leading to high fixed income allocations and lower equity exposures.

Applying Immunization techniques:

- Immunization techniques include duration matching, cash flow matching and annuitization of retired life liabilities.
- Full cashflow matching or duration matching increases the likelihood that benefits will be paid.
- Complete matching of assets and liabilities is rarely appropriate, though, as the level of benefits that can be provided on this basis is likely lower. A balance must be struck.
- Annuitization of retired life liabilities ensures a perfect immunization for this group, and, in most cases, is a complete transfer of future risk to the insurer.

5. Learning Objectives:

6. The candidate will be able to analyze, synthesize and evaluate plans designed for executives or the highly paid.

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

Learning Outcomes:

(6b) Given a specific context, apply principles and features of supplemental retirement plans.

(6c) Integrate a plan for executives with the basic benefit plan.

(8a) Perform valuations for special purposes, including:
- (v) Plan termination/windup
- (vi) Accounting valuations
- (vii) Open group valuations
- (viii) Plan mergers, acquisitions and spinoffs

(8d) Advise plan sponsors on accounting costs and disclosures for retirement plans under various standards and interpretations.

Sources:

Retirement Plans - 401(k)s, IRAs and Other Deferred Compensation Approaches, Allen et al., 12th Edition, 2018, Ch. 14 (pp. 250-263)

DA-185-20: Plan Curtailments & Settlements Under FASB ASC Topic 715 Relating to Plan Terminations, Part 1

DA-179-19: Introduction (A58), IFRS1 (paragraphs 1-40 & Appendix A), IAS19, IFRIC14

DA-157-18: PWC IFRS Manual of Accounting Ch. 12 (excluding FAQ 12.113.2 to 12.127.1)

DA-168-19: IFRS and US GAAP: Similarities and Differences, Ch. 5 only

Commentary on Question:

This question tested the participants' ability to calculate the DBO and benefit cost of an executive plan both before and after a plan freeze. The question also tested the candidates' understanding of both IAS 19 and ASC 715 as it pertains to curtailments. On average, candidates did fairly well on this question. Candidates that entered formulas in Excel rather than hard coded numbers were more likely to receive partial credit if there were errors in any of the underlying steps.

5. Continued

Solution:

(a) Calculate the 2021 Defined Benefit Cost for the SRP under IAS 19.

Show all work.

Commentary on Question:
Candidates generally did well on part a). Common mistakes included:

- *Projecting service to retirement age for DBO*
- *Neglecting to project pay to retirement age for DBO*
- *Neglecting to discount the annuity factor to valuation date*

The model solution for this part is in the Excel spreadsheet

(b) Calculate the revised 2021 Defined Benefit Cost, including the change to Other Comprehensive Income, for the SRP under IAS 19 reflecting the plan freeze.

Show all work.

Commentary on Question:
Candidates did not perform as well on part b). The most common mistakes were:

- *Failure to correctly remeasure the liability after the plan change*
- *Failure to note that service cost becomes zero after the plan change*

Note that the preferred approach was to remeasure the liability as of March 31, 2021 before the plan change. Some candidates remeasured the liability after the plan change; credit was also provided for this approach.

The model solution for this part is in the Excel spreadsheet

(c) Compare and contrast the accounting treatment of the plan freeze under IAS 19 and U.S. Accounting Standard ASC 715.

No calculations required.

Commentary on Question:
Most candidates did well on part c). Candidates most commonly lost points by failing to mention when the curtailment should be recognized under both standards.

5. Continued

	ASC 715	IAS 19
Event	The event is considered a curtailment under both ASC 715 and IAS 19 due to reduction in future accruals for the one employee.	
Recognition	Curtailments resulting from plan terminations or amendments are recognized when realized (for example once the plan amendment is adopted).	Curtailment gains and losses should be recorded when the curtailment occurs.
Interim Remeasurement	-The liability is remeasured as of March 31, 2021 using updated discount rates both before and after the plan freeze	
Gain/Loss Amortization	The remaining gain/loss is re-amortized using a 10% corridor at the remeasurement date	No gain/loss amortization
Curtailment recognition	-The decrease in liability is used to offset net loss of the plan. -Entire prior service cost is recognized in expense -Curtailment charge shown as a separate line item	-The full change in liability due to the plan amendment is recognized as a curtailment expense -Curtailment charge shown in past service cost.

6. Learning Objectives:

7. The candidate will be able to analyze/synthesize the factors that go into selection of actuarial assumptions.

9. The candidate will be able to apply the standards of practice and guides to professional conduct.

Learning Outcomes:

(7a) Evaluate appropriateness of current assumptions.

(7b) Describe and explain the different perspectives on the selection of assumptions.

(7c) Describe and apply the techniques used in the development of economic assumptions.

(7d) Recommend appropriate assumptions for a particular type of valuation and defend the selection.

(9a) Apply the standards related to communications to plan sponsors and others with an interest in an actuary's results (i.e., participants, auditors etc.).

Sources:

DA-183-20: Forecasting Investment Returns and Expected Return Assumptions for Pension Actuaries

DA-140-21: ASOP 27 - Selection of Economic Assumptions for Measuring Pension Obligations

DA-139-21: ASOP 35 - Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations

DA-168-19: IFRS and US GAAP: Similarities and Differences, Ch. 5 only

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) Calculate the following for the pension plan portfolio:

(i) Arithmetic return

(ii) Geometric return

Show all work.

6. Continued

Commentary on Question:
Successful candidates identified formulas and showed all calculations.

Many candidates struggled with the geometric return in part (ii). Candidates who successfully used the approximation method to calculate the expected geometric return were given full credit. Partial credit was given if candidates only identified the appropriate formulae and attempted the calculation of either the standard deviation (variance) or expected geometric return.

The model solution for this part is in the Excel spreadsheet.

(b) Critique each of the assumptions used to calculate the financial disclosure information.

Commentary on Question:
To receive full credit, candidates needed to address each of the 8 listed assumptions.

Successful candidates provided explanations in critiquing the appropriateness of each assumption. A number of candidates failed to recognize significance of the unreduced benefit at age 60 and how that should impact retirement age assumption.

The model solution below is a sample of an answer that would receive full credit and is not intended to be an exhaustive list of possible explanations.

Expected Return on Plan Assets
- The Expected Return on Plan Assets determined in part A is 5.28%, therefore a 6.00% assumption appears too high based on the information available.
- Should reflect the average rate of earnings expected on the funds invested or to be invested to provide for benefits.

Discount Rate
- Based on the rate at which the benefit obligation could be effectively settled (rate of return on high-quality fixed-income investment with similar durations to those of the benefit obligation). i.e. based on marked-to-market bond rates
- Setting the discount rate equal to the Expected Return on Assets is not compliant with ASC 715 accounting standards. In this case, we know the Expected Return on Plan Assets value includes expectations related to equities

6. Continued

Salary Scale

- When compared to the expected long-term inflation assumption of 2.0%, the salary assumption appears insufficient to provide for future increases in salary.
- Salary assumption is typically set using a building block approach (inflation + productivity growth + merit). In this case, the assumption does not even provide for inflation.

Inflation

- An appropriate inflation assumption may include consumer price indices, the implicit price deflator, forecasts of inflation, yields on government securities or various maturities and yields on nominal and inflation-indexed debt.

Retirement Age

- A single retirement age may be appropriate in different circumstances, especially if the plan has a small membership with limited credibility, but it would generally not be appropriate for larger plans.
- Given the plan is unreduced at age 60, assuming members retire once their benefit is unreduced is reasonable. This is taking the plan design into consideration when setting the assumption.
- Other factors the actuary may consider are: employer-specific or job-related factors (occupation, employment policies, etc.), design of social insurance programs, and availability of other employer-sponsored postretirement programs.

Termination Assumption

- The actuary should consider employer-specific or job-related factors such as occupation, employment policies, etc and plan provisions when setting the termination assumption.
- In the case of a small active membership, not having a termination scale may be reasonable, but it would generally not be appropriate for larger plans.

Mortality Table

- It is only reasonable to adjust mortality base rates when credible plan experience is available.
- Depending on the size of the plan, the 90% adjustment of standard mortality base rates may or may not be reasonable.

6. Continued

Mortality Improvement Scale
- Actuaries should reflect mortality improvement scales.
- Actuaries should likely use Scale CPM-B

(c) Describe the economic assumption disclosures that an actuary must communicate in an actuarial report under Actuarial Standard of Practice No. 27, Selection of Economic Assumptions for Measuring Pension Obligations.

Commentary on Question:
Successful candidates were able to thoroughly describe the required disclosure items pertaining to economic assumptions (based on ASOP 27). The following solution illustrates an answer that would receive full credit. It is not an exhaustive list of descriptions of the economic disclosures; other correct answers were also awarded credit.

Assumptions used
- Describe each significant assumption used in the measurement.
- Sufficient detail should be shown to permit another qualified actuary to assess the level and pattern of each assumption.

Rationale for Assumptions
- Disclose the information and analysis used in selecting each economic assumption that has significant effect on measurement.

Change in Assumptions
- Disclose any changes in the economic assumptions from those previously used.

Changes in Circumstances
- Disclose change in circumstances known to the actuary that occur after the measurement date and that would affect economic assumptions selected as of the measurement date.

Disclosure of Prescribed Assumptions or Methods
- State the source of any prescribed assumptions or methods.
- With respect to prescribed assumptions or methods set by another party:
  - Any prescribed assumption or method set by another party that conflicts with what, in the actuary's professional judgment, would be reasonable for the purposes of the measurement; or
  - Any prescribed assumption or method set by another party that the actuary is unable to evaluate for reasonableness for the purpose of the measurement.

6. Continued

Additional Disclosures

- Disclose reliance on other sources and thereby disclaims responsibility for any material assumption or method set by a party other than the actuary.

(d) Explain three approaches to determine the expected return on plan assets.

Commentary on Question:
To receive full credit, candidates needed to reflect the implementation of the new investment strategy, which will phase in over three years, in explaining three approaches to determine the assumption. Many candidates provided generic investment strategy answers which ignored Company ABC's three year investment strategy. Candidates were granted partial marks for describing the assumption setting methodology based on current or future investment strategy.

Development of a blended expected return assumption

- Consisting of a single rate that reflects both the current and future expected asset allocations.
- This method would determine the blended rate based on the effective date of the new investment strategy.
- The weighting of the two end points depends on how quickly the asset allocation is expected to change and the timing of projected plan cash flows.

Use a select-and-ultimate expected return assumption

- Anticipates different levels of investment returns for different future time periods.
- One expected return on assets for the current investment strategy and a new expected return on assets once the new investment strategy becomes effective (in this case, 2 different rates would be used).

Base the expected return assumption on new investment strategy

- Only the anticipated future asset allocation would be used for the expected return on assets; no weight would be given to the current allocation.

7. **Learning Objectives:**

1. The candidate will be able to analyze different types of registered/qualified retirement plans and retiree health plans.

2. The candidate will understand the impact of the regulatory environment on plan design.

3. Candidate will understand how to analyze the risks faced by retirees and the participants of retirement plans and retiree health plans.

5. The candidate will be able to evaluate sponsor's goals for the retirement plan, evaluate alternative plan types and features, and recommend a plan design appropriate for the sponsor's goals.

Learning Outcomes:

Describe the structure of the following plans:

(a) Traditional defined benefit plans
(b) Defined contribution and savings plans
(c) Hybrid plans
(d) Retiree Health plans
(e) Other alternative retirement plans such as shared risk plans, target benefit plans, etc.

Given a plan type, explain the relevance, risks and range of plan features including the following:

(a) Plan eligibility requirements
(b) Benefit eligibility requirements, accrual, vesting
(c) Benefit/contribution formula, including the methods of integration with government-provided benefits
(d) Payment options and associated adjustments to the amount of benefit
(e) Ancillary benefits
(f) Benefit subsidies and their value, vest or non-vested
(g) Participant investment options
(h) Required and optional employee contributions
(i) Phased retirement and DROP plans
(j) Risk-sharing provisions

(2a) Explain and apply restrictions on plan design features to a proposed plan design.

(2e) Understand conflicts between regulation and design objectives and recommend alternatives.

(3a) Identify risks face by retirees and the elderly.

7. Continued

(3b) Describe and contrast the risks face by participants of:
- (i) Government sponsored retirement plans
- (ii) Single employer sponsored retirement plans
- (iii) Multiemployer retirement plans, and
- (iv) Social insurance plans

(3d) Propose ways in which retirement plans and retiree health plans can manage the range of risks faced by plan participants and retirees.

(5a) Describe ways to identify and prioritize the sponsor's goals related to the design of the retirement plan.

(5c) Assess the feasibility of achieving the sponsor's goals for their retirement plan.

(5e) Identify the ways that regulation impacts the sponsor's plan design goals.

(5g) Design retirement programs that promote employee behavior consistent with sponsor objectives.

Sources:
DA-617-16: The TFSA: A Practical Addition to Your Client's Savings Portfolio

Morneau Shepell Handbook of Canadian Pension and Benefit Plans, 16th Edition, Ch 14

Canadian Pensions and Retirement Income Planning, Willis Towers Watson, 6th Edition, 2017
- Ch. 1 (sections 120-145)
- Ch. 16 (sections 1615-1619 &1680)
- Ch. 17 (section 1790)
- Ch. 18 (sections 1825-1835)
- Ch. 23

Commentary on Question:
This question requires candidates to demonstrate understanding of plan design by comparing the RRSP and TFSA arrangements. Successful candidates were able to compare the design features of the plans and perform calculations that reflect the impact of taxes, contributions, etc. to annual income after retirement.

Solution:
(a) Compare and contrast the design features of each option with respect to generating retirement savings.

No calculations required.

7. Continued

Type of Arrangement: RRSP vs. TFSA

RRSP
Generally, RRSP is more suitable than TFSA to generate retirement savings

- Withdrawals are taxed as income
- Withdrawals affect eligibility to federal income-tested benefits and tax credits

TFSA
Suitable as a retirement savings vehicle, but can also be used for other purposes

- Best option depends on income level, pre- and post- income tax rate
- Bank account interest could be insufficient to generate adequate savings
- Withdrawals are not taxed as income

Eligibility
TFSA will be more advantageous than RRSP due to immediate eligibility and not having to wait one year

Annual Employee Contribution

RRSP
Allow up to 50% of maximum contributions (lesser of 18% of income and an annual dollar limit), so greater potential to generate savings than under TFSA
Unused contributions are carried over
Contributions are tax deductible to the employee

TFSA
Lower contribution limit and excess contributions earn low return, so less potential to generate retirement savings
Contributions are after tax
Maximum contributions not related to income, so not as much potential for high

Contributions in Excess of Maximum Allowable Amount under the ITA

While TFSA maximum is lower than RRSP, contributions in excess of maximum are available to employees, so this TFSA could better generate savings for high earners
RRSP contributions limited by dollar maximum, which could hurt savings potential for high earners

Employer Matching Contribution

RRSP provides greater match than TFSA (100% vs. 75%); this feature will allow participants in the RRSP more potential to generate retirement savings

7. Continued

(b) Assess which option provides the higher expected annual retirement income for the new hire.

Show all work.

Commentary on Question:
The 1 year eligibility period in the RRSP was interpreted differently by different candidates. The model solution shown assumes that no contributions are made to the plan until the end of the second year. Credit was also provided if candidates assumed that the employees would be eligible to make the full first year contribution at the end of year 1.

The model solution for this part is in the Excel spreadsheet.

8. Learning Objectives:

7. The candidate will be able to analyze/synthesize the factors that go into selection of actuarial assumptions.

9. The candidate will be able to apply the standards of practice and guides to professional conduct.

Learning Outcomes:

(7a) Evaluate appropriateness of current assumptions.

(9b) Explain and apply the Guides to Professional Conduct.

(9d) Demonstrate compliance with requirements regarding the actuary's responsibilities to the participants, plan sponsors, etc.

(9e) Explain and apply all of the applicable standards of practice related to valuing retirement obligations.

(9f) Recognize situations and actions that violate or compromise Standards or the Guides to Professional Conduct.

Sources:

DA-614-21 – Practice Specific Standards for Pension Plans 3100-3570, CIA Consolidated Standards of Practice

DA-140-21: ASOP 27 - Selection of Economic Assumptions for Measuring Pension Obligations

DA-139-21: ASOP 35 - Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) Describe considerations when calculating a commuted value for a former single employer defined benefit pension plan member with reduced life expectancy.

Commentary on Question:

The following solution illustrates an answer that would receive full credit. It is not an exhaustive list of considerations; other correct answers were also awarded credit.

8. Continued

- Should be calculated as of the date of the medical certificate specifying that the former member has life expectancy less than two years
- The commuted value should be adjusted for interest and benefits paid to the date of payment.
- If the former member is entitled to a commuted value transfer based on plan provisions or legislation that is not conditional on reduced life expectancy, the amount payable should be the greater of the amount calculated in accordance with the reduced life expectancy guidelines and without regard to shortened life expectancy.
- The commuted value would reflect the plan member's full benefit entitlement as a deferred or immediate pensioner.

(b) Describe the disclosure requirements when communicating pension commuted values under Canadian Institute of Actuaries Consolidated Standards of Practice.

Commentary on Question:
Successful candidates were able to thoroughly describe the required disclosure items pertaining to communicating pension commuted values. Some candidates only went through the assumptions they would use. Other communication items are also required to be disclosed. The following solution illustrates an answer that would receive full credit. It is not an exhaustive list; other correct answers were also awarded credit.

- A description of the benefit entitlements involved.
- A description of the actuarial assumptions used in determining the commuted value and the rate of interest to be credited between the valuation date and the date of payment.
- A statement of the period for which the commuted value applies before re-computation is required.
- A statement as to whether the commuted value has been computed in accordance with these standards of practice.

(c) Assess whether each assumption listed above would be appropriate to determine the following:

(i) Commuted value for a terminated employee

(ii) Defined Benefit Obligation under International Accounting Standards IAS 19, Rev 2011

8. Continued

Commentary on Question:
Most of the candidates that answered this question did well, particularly for the interest rate and mortality assumptions. The following solution illustrates an answer that would receive full credit.

	(i) Commuted Value	(ii) DBO
Interest Rate	Not acceptable. Should be: • Two interest rates, one for first 10 years after valuation date (select period) and second applicable for years thereafter (ultimate period) • Based on prescribed CANSIM (bond) series and prescribed formulas	May be acceptable. • May be a single rate or a series of rates, such as a yield curve.
Pre and Post-Retirement Mortality	Not acceptable. Should be: • CPM-2014 • Based on prescribed table in CIA standards.	Not acceptable. Should be: CPM-2014 or another mortality table if the plan has enough credibility to defend the selection of that table/adjustment.
Age difference	Actual age of spouse should be used if available.	May be acceptable. This assumption should be reviewed periodically to ensure that it is representative of historical and current demographic data.

9. Learning Objectives:

7. The candidate will be able to analyze/synthesize the factors that go into selection of actuarial assumptions.

Learning Outcomes:

(7b) Describe and explain the different perspectives on the selection of assumptions.

(7d) Recommend appropriate assumptions for a particular type of valuation and defend the selection.

Sources:

DA-139-21: ASOP 35, Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations

DA-167-17: ASOP 25: Credibility Procedures

Credibility Educational Resource for Pension Actuaries, Society of Actuaries

Commentary on Question:

This question tested candidates' knowledge on how to appropriately set the mortality assumption. Candidates generally performed well on most parts of this question. Candidates that performed well in part a) correctly identified the factors. Candidates that performed well in part b) were those who honed into the specifics of the plans and provided appropriate rationale of factors to take into consideration. Lastly, candidates that performed well on part c) identified whether or not there was fully credible information and used that information to determine the credibility factor and develop the ultimate weight to be given to plan experience.

The model solution shown is not exhaustive of items which could be considered in parts a or b. It represents an answer that would receive full credit. Candidates also received credit if they included other relevant considerations related to the mortality assumption. Partial credit was provided in part c) if candidates knew how to do part of the calculations.

Solution:

(a) List the factors actuaries should take into account in the selection of mortality and mortality improvements, according to Actuarial Standard of Practice No. 35, Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations.

- Possible use of different assumptions before and after retirement (ex. no pre-retirement mortality for small plan)
- Possible use of different assumption for disabled lives than healthy lives
- Should reflect impact of mortality improvement after measurement date
- Mortality table should reflect expected mortality rates as of the measurement date (including improvement from effective date of table to the measurement date)

9. Continued

(b) Describe the considerations for setting the mortality assumption for the following:

(i) Plan A

(ii) Plan B

(iii) Plan C

(i) **Plan A (Unit benefit plan):**

- Since employee population is 85% male, may only have credible data to create credibility factor for male participants.
- Expect the retiree population to also be predominantly male (even though there could be some female beneficiaries receiving survivor benefits)
- Female mortality in the plan will likely be based on standard table without adjustment
- Should analyze data of those currently in pay for study (ignore those not yet in pay)
- Should use counts weighted methodology to determine credibility factor since plan formula not based on salaries
- Standard table for this plan should likely be blue-collar since hourly union employees
- Standard table for this plan may be a headcount weighted table
- Standard table should be a recently released table
- Aim to collect 3-5 years of data if do study to develop credibility factor for mortality table

(ii) **Plan B (FAP plan):**

- Since plan is 50/50 male female, both genders may have credible data for study
- Should evaluate deaths separately by gender to determine separate credibility factors
- Should analyze data of those currently in pay for study (ignore those not yet in pay)
- Should use amounts weighted methodology to determine credibility factor since plan formula based on salary
- Will need to include benefit amounts in study data
- Standard table for plan may be white collar or could be aggregate mix since salaried non-union employees benefit
- Standard table for this plan should be amounts-weighted
- Standard table should be a recently released table
- Aim to collect 3-5 years of data

9. Continued

(iii) **Plan C (plan with lump sum option):**

- Plan will not have enough data to be credible since most people take a lump sum
  -> very few annuitants
- Should likely assign 0 credibility to plan experience and instead fully rely on a standard mortality table
- Standard table should be white collar since plan is for physicians
- Standard table should be amounts weighted since benefit is based on salaries
- Standard table should be a recently released table
- Standard table should be sex-based (even if lump sums based on unisex table)

(c) Calculate the multipliers to be applied to the standard mortality table base rates based on the plan experience and credibility theory for the following:

(i) Males

(ii) Females

Show all work.

The model solution for this part is in the Excel spreadsheet

10. Learning Objectives:

7. The candidate will be able to analyze/synthesize the factors that go into selection of actuarial assumptions.

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

Learning Outcomes:

(7a) Evaluate appropriateness of current assumptions.

(7b) Describe and explain the different perspectives on the selection of assumptions.

(7d) Recommend appropriate assumptions for a particular type of valuation and defend the selection.

(8d) Advise plan sponsors on accounting costs and disclosures for retirement plans under various standards and interpretations.

(8e) Demonstrate the sensitivity of financial measures to given changes in plan design.

Sources:

Fundamentals of Private Pensions, McGill et al., 9th Edition, 2010
- Ch. 5

Fundamentals of Retiree Group Benefits, Yamamoto, Dale H., 2nd Edition, 2015
- Ch. 9 (pp. 308-339 and pp. 350-357)

DA-139-21: ASOP 35 - Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations

DA-102-13: OECD paper, Evaluating the Design of Private Pension Plans: Costs and Benefits of Risk Sharing

DA-157-18: PWC IFRS Manual of Accounting Ch. 12 (excluding FAQ 12.113.2 to 12.127.1)

DA-179-19: Introduction (A58), IFRS1 (paragraphs 1-40 & Appendix A), IAS19, IFRIC14

Commentary on Question:

The question was trying to test the candidates' understanding of the interaction between plan design and demographic assumptions as well as the accounting impact of plan design changes. Most candidates did better on part b than on part a.

10. Continued

Solution:

(a) Evaluate the impact of the proposed plan changes on the demographic assumptions.

Commentary on Question:
Most candidates were able to identify the obvious changes: earlier retirements, lower turnover, and the need to add a disability decrement. Comments regarding the appropriateness of NOC's assumptions, such as a single retirement age, did not receive credit since the question did not ask for that commentary. Candidates that provided responses in the context of NOC's benefit plans did better than candidates that provided general responses. To achieve maximum points a candidate needed to discuss possible impacts beyond the surface level and explore all possible employee behavior after a plan change.

Increase in Pension Plan benefit multiplier could:

- Result in higher retirement rates at earlier ages
  - Richer benefits may accelerate retirement plans for employees, especially those close to planned retirement
- Result in lower retirement rates at the earlier ages
  - Fewer participants leaving for competitors' richer benefits or
  - Delaying retirement to accrue a larger benefit
- Have no immediate impact
  - If multiplier is only applied prospectively, participants would not see impact for a few years.
  - DB plan may not be the cause of termination or retirement
  - If highly paid participant is at $3,000/yr of service max, higher multiplier will not help and employee may still leave for competitor with richer benefits
- Result in lower turnover due to fewer participants leaving for the competitor

Add Disability benefit to Retiree Health Plan

- Composition of workforce - NOC is in high risk industry which means risk of becoming disabled is higher compared to white collar and some other blue-collar jobs so probability of disability should be reflected in assumptions
- There is currently no disability assumption; existence of a disability benefit means this assumption should be added
  - The actuary should consider whether they should use a standard disability table or perform an experience study.
  - Should the standard table be adjusted based on plan population?
  - All assumptions should be consistent. Therefore, termination/retirement assumptions should be adjusted accordingly based on whether a disability assumption is added (prior disablements may have been included in the term / ret assumption)

10. Continued

- Consideration should be given to using disabled mortality tables for those assumed to decrement due to disability
- The actuary should consider taking into account the potential for recovery from disability.

(b) Describe the implications of these changes on the 2021 Defined Benefit Cost under International Accounting Standards IAS 19, Rev 2011 for the following plans:

(i) Pension Plan

(ii) Retiree Health Benefit Program

No calculations required.

Commentary on Question:
Most candidates identified the plan change would increase the interest cost and service cost, and the prior service cost would be immediately recognized for the Pension Plan. Similarly, the interest cost would increase and the prior service cost base would be immediately recognized for the Retiree Health Benefit Program. However, no candidate correctly identified that there would be a decrease in service cost (holding all assumptions equal). Candidates that did well identified that there would be a remeasurement on the date the amendment was announced (not the effective date of the amendments). To achieve maximum points a candidate needed to provide all of the above plus some details surrounding what occurs at remeasurement date – assumptions are redetermined and any gains/losses are recognized.

(i) Pension Plan
- Amendment should be reflected February 1, 2021, resulting in the remeasurement of the 2021 DBC at that date
- All assumptions should be evaluated as of the new measurement date
- Discount rate should reflect new expected benefit payments
- Final 2021 expense will equal 1/12 of original expense plus 11/12 of annual expense as of 2/1/21 remeasurement date
- Actual asset returns and benefit payments during January 2021 should be reflected at new measurement date
- IC will most likely increase due to increase in liability and future benefits
- SC will most likely increase due to increase in liability and future benefits
- The increase in DBO due to the plan amendment would be recognized immediately

10. Continued

(ii) Retiree Health Benefit Program

- Amendment should be reflected February 1, 2021, resulting in the remeasurement of the 2021 DBC at that date
- All assumptions should be evaluated as of the new measurement date
- Discount rate should reflect new expected benefit payments
- Final 2021 expense will equal 1/12 of original expense plus 11/12 of annual expense as of 2/1/21 remeasurement date
- Actual benefit payments during January 2021 should be reflected at new measurement date
- IC will increase due to increase in liability and future benefits
- Post-65 claims and expected payments will likely increase due to providing disabled participants post-65 benefits
- SC will most likely decrease since the eligibility for benefits under the disability decrement will go from 55&10 to immediate.
- The increase in liability due to the plan amendment would be recognized immediately

11. Learning Objectives:

4. The candidate will be able to evaluate plan design risks faced by sponsors of retirement plans and retiree health plans.

Learning Outcomes:

(4c) Recommend ways to mitigate the risks identified with a particular plan feature

(4e) Assess the impact of possible changes in plan design due to changes in legislation.

Sources:

DA-166-17: Shifting Public Sector DB Plans to DC, pp. 1-22

DA-114-13: Risk Management and Public Plan Retirement Systems - Appendices only (pp. 1-33 background only)

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) Explain how the advantages of converting a defined benefit pension plan to a defined contribution plan may not translate to the public sector.

Commentary on Question:

Credit was given for responses that describe the difficulties of a DB/DC conversion as applied to public sector plans. To get full credit, the responses needed to go beyond stating general advantages of DB to DC conversions. Candidates generally did not perform well in part a) since the majority of candidates did not identify potential obstacles specific to public sector plans, such as existing cost sharing features, generous benefits, and societal considerations.

Certain perceived advantages of the Defined Benefit (DB) to Defined Contribution (DC) conversion may not materialize in the public sector realm.

Private corporations have a profit motive and can off load costs without regard as to who may be burdened with this cost. Public sector employers can off load costs as well but the burden may be picked up by other government entities or ultimately the taxpayer.

Public sector plans have already evolved to no longer be pure DB only plans in which the plan sponsor can carry all the risks. Most large public sector plans have already moved towards more risk sharing elements with plan members which may be difficult to convert to a straight DC plan (e.g. inflation protection is now increasingly risk shared). Therefore, cost savings for the DB to DC conversion may not fully materialize as it would cost considerably more to maintain similar benefits in the public sector plan (i.e. increased cost of upwards of 70% more).

11. Continued

Attracting and retaining employees is a more important consideration in public sector plans due to lower salaries than can be offered by private corporations. DB is generally more attractive than DC plans to meet this objective and is valued by the employees.

Unions and collectively bargained benefits may limit the ability to transition to DC benefits.

The plan sponsor would face increased financial risk from the closed DB pension plan as compared to an ongoing pension plan open to new entrants**.** Conversion to DC does not address the legacy unfunded liability. Typically, it would take a long time to extinguish the legacy unfunded liability. And thus, the extra costs and increased risk would persist in the interim period for which the government would bear 100% responsibility of the unfunded liabilities. Relative to an open public sector DB plan partially funded with employee contributions, a closed plan would represent a substantial increase of the government / taxpayer risk exposure over a very long time.

Public sector pensions are often part of negotiated compensation packages or enacted in legislation and thus may be difficult to convert.

Arguments that DC plans provide greater portability may not translate to public sector DB plans as there exists large multi-employer public sector pension plans that provide mobility and portability.

Government has more societal considerations than private corporations. That is to say, advocates of converting to DC usually ignore public policy risks and rewards like addressing the need for adequate retirement income for the elderly.

(b) Describe how taxpayer risks are affected by the following in public sector pension plans:

(i) Plan design features

(ii) Contribution policy

(iii) Governance structure

Commentary on Question:
Credit was given for responses that describe how taxpayer risks are affected by the plan design features, contribution policy, and governance structure. Similar to part (a), the responses needed to go into the unique aspects of public pension plans of the three listed items to receive full credit. Candidates generally did better in part b) since the majority of candidates were able to articulate the effect on the taxpayer base and the diffused governance structure of public sector plans.

11. Continued

i) Taxpayer Risk that is inherent in the Plan Design Features

This risk is larger and more significant in a public sector pension plan compared to private sector pension plans because:

- The public sector plan design usually provides for indexation during retirement, which means benefit payments continually increase
- Public sector pension plans in Canada have benefits that are usually offset by the Canada Pension Plan benefit (CPP)
- Higher benefits compensate for lower salaries (i.e. benefit levels are high enough to attract and retain public sector employees)
- Public sector benefits are typically codified in law and thus difficult to modify.
- Generous features and benefit options available to the public sector employees in the plan design.
    - Early retirement subsidies or special programs that allow for members to retire early with a larger pension; and
    - Plan members can anti-select (i.e. game the system) against the pension plan by manipulating the Final Average Earnings to increase benefits by legitimate means (recognition of overtime, vacation, and sick credits, etc.)
    - Systematic longevity risk – risk that the plan members will live longer than expected is a significant risk for public sector plans because most provide inflation linked benefits which greatly increase the value of future payments and thereby increase the cost of systematic longevity improvements.

ii) Contribution Policy

- For public sector plans, there are other demands for revenue streams and budgetary considerations (e.g. keep schools open, roads paved) which compete for the same monies as the pension contributions.

11. Continued

- Taxpayers may easily recognize reduced funding for other government responsibilities, like for education and infrastructure, but taxpayers are not likely to notice optimistic assumptions that pass risk onto future generations of taxpayers.

- Skipping Contributions (Contribution Holidays) - Although employee contributions are generally required in public plans, competing fiscal and political priorities can cause governments to take contribution holidays, thus pushing the funding to the future generation of taxpayers.

- Challenge of Managing plan surplus vs. investment risk – pension boards can use the surplus to improve benefits or lower contributions. However, short term decisions without proper analysis of the remaining underlying risk exposures can impact future generations of taxpayers negatively.

- Contribution policies and mechanisms are needed to support continuous funding, education of the decision makers, and identification of mispriced risk incentives inherent in the system.

- Contribution Policy also needs to consider:
  - The maturity of the plan – the comparison between # of actives vs. # inactives and/or payroll vs. benefit payments can indicate how much immediate cash is needed to fund pension plan benefits vs. what will be needed in the future. Investment risk strategy and contribution policy could differ based on plan maturity.

  - Taxpayers ultimately fund the public sector pension plan through taxes. As a consequence, the risk of an inadequately funded public sector pension plan is ultimately borne by the current and future taxpayers.

  - A secondary consequence of an inadequately funded public sector pension plan is that there may be an increased draw on social security programs for which the taxpayers are direct contributors.

iii) Governance Structure

- The Governance structure is unique to public pension plan since there is no single governing authority that is ultimately responsible to ensure appropriate risk limits are observed and mitigation strategies are taken.

- The governance principle/agent problems exist because of the diffused governance authority and accountability structure. Participants are not incentivized to act in a way that reduces overall risk for the pension plan.

11. Continued

- Elected officials do not have the expertise to manage pension plan risk as it is "outside the core business".

- Bad decisions could result from the lack of risk analytical tools needed to understand and manage pension plan risk.

- In addition, the often antagonistic relationship between employers and unions can lead to difficulty in obtaining agreements between parties and making decisions.

- There are inherent risks in the long time horizons of public sector pension plans since they encourage passing of responsibilities into the future and create few incentives to hedge risks (which is not costless or guaranteed as the tax base is not always stable).

- Stakeholders are able to push risk to future generations of stakeholders and thus future generations of taxpayers.