RET DAU Model Solutions
Fall 2018

1. **Learning Objectives:**

1. The candidate will be able to analyze different types of registered/qualified 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

(5f) Design retirement programs that manage retirement risk and are consistent with sponsor objectives.

Sources:

Fundamentals of Retiree Group Benefits, Yamamoto, Second Edition, Ch. 4

Commentary on Question:

This question tests candidates' ability to describe cost management strategies (other than plan design features) for the most expensive population in retiree health plans.

Many candidates listed sub bullets under one strategy as multiple strategies. For example, listing multiple changes to plan provisions as multiple strategies resulted in only credit for dynamic plan provisions.

Candidates did not receive credit for responses that:

- *Applied to only post-65 health plans (such as Medicare integration or Retiree Drug Subsidies)*
- *Passed costs directly to retirees*
- *Did not include a description nor explanation. For example, a common response that received no credit was, "Move to a retiree exchange."*

1. **Continued**

Solution:
Describe eight health care cost management strategies a company can implement for a pre-65 retiree health benefit program that do not directly shift costs to retirees.

A company can implement the following cost management strategies:

1) Large case management
    a. A majority of claims are generated from a minority of retirees
    b. A claims payer will review all claims for services by retirees considered to be financially significant
    c. Determine if services are being duplicated or if costs can be reduce
2) Utilization review
    a. Used to evaluate the appropriateness of treatment before services are provided
    b. Introduce participants to alternatives that produce the same results but are more cost-effective
3) Spousal Initiatives – encourage spouses to enroll in their own plans by
    a. Introducing surcharge for spousal coverage
    b. Providing a bonus to employee for signing up under spouses plan
    c. Making spouse ineligible if other coverage is available
4) Dynamic Plan provisions – a plan should be reviewed periodically to reflect more dynamic plan provisions
    a. Plan provisions include deductibles, co-payments, coinsurance, caps/maxes
5) Managed Prescription Drugs – Features include
    a. Negotiated reimbursement rates
    b. Reduced administrative fees
    c. Utilization review
    d. Specialty pharmacies
    e. Mail-order plan
6) Enhanced quality of benefit – provide a program that provides higher quality of benefits at the same or lower cost
    a. Use centers of excellence
    b. Health care coalitions, created by local employers to address quality, affordability, and accessibility of health care services
    c. Outcome monitoring to encourage retirees to use specific providers
    d. Retiree education programs
7) Managed Health
    a. Wellness programs – encourage retirees to make healthier choices that will result in long-term benefits
    b. Lifestyle education that begins while an employee is still active
    c. Lifestyle based contribution rates (i.e. smoker vs. non-smoker rates)
    d. Credits for healthy lifestyle

1. **Continued**

8) Retiree Exchange
    a. Provide contribution towards medical coverage at the current cost level
    b. Allows retirees to elect coverage that fits the needs that fit their individual needs/circumstances
    c. Competition among carriers leads to more competitive pricing, however some areas may have limited coverage, but it may be provide a more universal solution for employer with multiple locations
    d. Limitations exist since pre-65 exchanges are not very developed

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.

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

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

(3a) Identify risks face 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.

Sources:

DA-115-13 Private Pensions Alternative Approaches

Managing Post-Retirement Risks

2. **Continued**

Commentary on Question:
This question asks candidate to identify weaknesses in savings plan design and recommend improvements to increase participants' financial security.

Overall, candidates did well on all parts of this question.

Solution:
(a) Describe risks faced by workers not covered by a retirement plan.

Commentary on Question:
Successful candidates related each risk back to how retirement plans mitigate risks.

- Not planning for retirement. Workers covered by a retirement plan are guaranteed at least some level of income during retirement; without a retirement plan some workers might not save for retirement
- Leakage restriction: retirement plans typically restrict employees from withdrawing money prior to retirement. Other types of accounts provide unrestricted access to savings.
- Inappropriate drawdown of funds upon retirement: retirement plans with a life time annuity option provide employees with income during all years of retirement; without a retirement plan, a retiree might spend too much upon retiring and not having enough during all years of retirement
- No base layer of income that retirement plans provide
- High annuity pricing: with commissions and low interest rates, individual annuity purchases may be priced higher than what can be secured directly from a retirement plan.
- No ability to share investment risk with employer
- Potential for poor investment decisions. Workers not covered by retirement plans make all investment decisions for themselves; retirement plans typically have investment advisors that help ensure appropriate investing

(b) Evaluate the effectiveness of the proposed plan provisions with respect to providing adequate retirement security for plan participants.

Commentary on Question:
To receive full credit, candidates had to evaluate eight features.

- If not compulsory, few may participate
- Eligibility will eliminate short service workers
- Employee contributions are not sufficient to accumulate significant assets
- Absence of employer contributions also minimize benefit accumulation
- Investment choice is not adequate for long-term returns

2. Continued

- Permitting withdrawals might lead employees to spend money prior to retiring
- Benefit on Termination or Retirement: Account balance may be spent instead of used during retirement
- Benefit on Death: Account balance may be spent by spouse instead of used during retirement

(c) Recommend changes to the proposed plan provisions to improve retirement security.

Commentary on Question:
To receive full credit, candidates had to recommend changes to eight different plan provisions. Recommending more than one change to a single plan provision did not receive credit.

- Eligibility: make immediate (auto-enrollment)
- Vesting: make immediate
- Employee Contributions: Have a higher minimum required contribution and allow a range up to say 15%
- Employer Contributions: Have a minimum employer contribution or matching formula
- Plan Fund Investment Options: Have diversified index fund option instead of very low guaranteed interest
- Loans/Withdrawals: Do not allow or only allow in limited circumstances
- Benefit on Termination or Retirement: No lump sum allowed or only allow lump sums, subject to a maximum amount; offer in-plan systematic withdrawals at retirement
- Benefit on Death: if spouse, account balance after retirement subject to restricted payments
- Consider auto-escalation of contributions
- Consider default balanced fund if more than one investment option
- Offer planning tools or advice
- Participation: make mandatory

3. **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:

(4b) Assess the risk from options offered, including:

- (i) Phased retirement
- (ii) Postponed retirement
- (iii) Early Retirement
- (iv) Option factors
- (v) Embedded options
- (vi) Portability options

Sources:

Fundamentals of Private Pensions, McGill, 9th Edition Ch 5

DA-154-15: Implementing Early Retirement Incentive Programs: A Step-by-Step Guide

Commentary on Question:

This question tests candidates understanding of how early retirement provisions options affect both the plan sponsor and the individual plan members.

Candidates performed well on both parts of this question.

Solution:

(a) Critique the proposed early retirement window.

- XYZ's goal is to reduce their pension liability. The cost of providing unreduced early retirement benefits and lump sums (depending on basis) will further increase the plan's liabilities and further deteriorate the funded status of the plan.
- The proposed early retirement window will increase XYZ's future funding requirements which would be a concern to XYZ if they are cash strapped as the case maybe.
- XYZ also needs to identify what the target reduction in the pension liability is and by when it should be achieved in order to know if the campaign was successful.
- Does providing the early retirement window help achieve XYZ's immediate and long term goals e.g. reducing pension liability, addressing substantial unfunded position, head count concerns, strategic business direction, etc..
- The lump sum option feature will require the pension plan assets to have sufficient liquid assets to prevent short sale of other less liquid plan assets at a loss over the short period while the retirement window is being offered.
- The campaign is targeting active employees with at least 20 years of service. This can be costly as XYZ can potentially loose experienced employees affecting XYZ's strategic business direction.

3. **Continued**

- XYZ cannot control how many employees will take the offer hence the remaining eligible employees may not be the individuals XYZ wanted to retain in the first place e.g. XYZ could end up losing individuals in key positions or with specialized knowledge that may need to be re-filled.
- The campaign is targeting a specific group and can raise legal issues if it is viewed as employment discrimination.
- No age restriction was added, so could have a participant retiring as early as age 41 if hired at 21. No reduction for early commencement will be extremely expensive.

(b) Evaluate this proposal from the perspectives of both Company XYZ and the active employees.

From XYZ's standpoint

- The program may not be retaining employees who are highly skilled and effective. XYZ should therefore consider only offering the program to particular groups of employees.
- Potential labor disruption issues may arise which could be even costlier to resolve than the cost of providing normal early retirement window.
- Allowing employees to work 50% of their current schedules and receiving 60% of their current pay is over paying for labor.
- Liquidity concerns and the immediate consequences to the funded status are less severe as there is no lump sum option and the early retirement is deferred for two years.
- There is the possibility that conditions may improve in two years.
- The full pension accrual will put added pressure on the funded status of the plan.
- Retirements during the period will slow down.
- Productivity and morale may deteriorate over the two year period for those leaving.

From the active employees' standpoint

- Gives employees who do not want to retire a chance to look for other full time jobs.
- Allows employees a chance to adjust to retirement.
- Some employees who will be leaving may not be motivated to perform as well as they did before.
- For some employees, the additional pay incentive may not be enough and therefore they may need to take up additional jobs.
- Junior employees get more opportunity to advance.
- Employees do not lose any value of their pension.

4. Learning Objectives:

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

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.

Sources:

DA-136-17: Selection of Actuarial Assumptions, Consultant Resource Manual, SOA Version, Mercer, pp. 5-69

DA-140-15: ASOP 27 Selection of Economic Assumptions for Measuring Pension Obligations

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) Describe the following methods used to set an expected return on asset assumption:

(i) Building Block Approach

(ii) Historical Method

(iii) Forward Looking Assumptions

Commentary on Question:

Successful candidates described each method in full detail. For the Building Block approach, most candidates understood that the assumption is broken down into its component parts, but struggled to explain the method behind the approach. For Historical Method and Forward Looking Assumptions, few candidates were able to explain the methods completely.

4. Continued

(i) **Building Block Approach**

- Under the building block method, overall expected investment return equals a weighted average of the individual expected return for each broad asset class (e.g., cash, fixed income, equities) based on the current or anticipated asset allocation.
- Expected return for each asset class is composed of inflation plus the real return for the class. Real returns may be further broken down between real risk-free return and a risk premium.
- Building block inputs could be based on either historical data or forward-looking capital market assumptions.

(ii) **Historical Method**

- Under this method, the actuary could begin with weighted historical returns for broad market categories, based on the current or anticipated asset allocations.
- Alternatively, if there were sufficient data and the pension trust's asset allocation had been stable enough overtime, the trust fund's actual performance could be used

(iii) **Forward Looking Assumptions**

- Forward looking assumptions are derived from current long term economic growth and equilibrium yield curve models.
- These models generally begin with the current state and offer an internally consistent path by which the modeled results can reach the assumed long term equilibrium.

(b) Describe the characteristics of a reasonable assumption according to Actuarial Standard of Practice No. 27.

- It is appropriate for the purpose of the measurement;
- It reflects the actuary's professional judgment;
- It takes into account historical and current economic data that is relevant as of the measurement date;
- It reflects the actuary's estimate of future experience, the actuary's observation of the estimates inherent in market data, or a combination thereof; and
- It has no significant bias (i.e., it is not significantly optimistic or pessimistic), except when provisions for adverse deviation or plan provisions that are difficult to measure are included and disclosed under section 3.5.1, or when alternative assumptions are used for the assessment of risk

4. Continued

(c) Critique the reasonableness of the following accounting assumptions as of January 1, 2018 for the National Oil Full-Time Salaried Pension Plan.

(i) Mortality

(ii) Turnover

(iii) Retirement Age

Commentary on Question:
Candidates generally answered this question well. Most candidates were able to explain that the assumptions were outdated and suggested alternatives. To receive full marks, candidates needed to explain the impact of using the outdated assumption on the accounting valuation.

(i) **<u>Mortality</u>**
- 83GAM is an outdated mortality table. It does not reflect the current levels of mortality, no generational improvements are applied.
- 83GAM will produce optimistically low liability which may not be appropriate for accounting and not be in accordance with professional actuarial judgment.
- The actuary's estimate of future experience will not be reflected

(ii) **<u>Turnover</u>**
- Turnover is based on experience of outdated data from years 2000 to 2005. A new analysis of turnover needs to be done based on more current historical data.
- The experience may be very different and lead to biased results.
- However, low turnover gains and losses in previous years may support continued use of the turnover assumption

(iii) **<u>Retirement</u>**
- The plan provides unreduced retirement at age 62 so assuming high level of retirement at age 62 is appropriate
- However 100% at age 62 may not be appropriate as there is a generous subsidy of 3% per year for early retirement.
- An age based scale would be more appropriate
- Could be based on plan's actual experience

5. **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.

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

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

(v) Government sponsored retirement plans
(vi) Single employer sponsored retirement plans
(vii) Multiemployer retirement plans, and
(viii) Social insurance plans

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

DA-820-18: Multi-Employer Plans

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) Describe the advantages and disadvantages of participating in a Multi-Employer Pension Plan (MEPP) from an employer's perspective.

Commentary on Question:

Candidates had to describe a total of 12 advantages and disadvantages in order to receive full points on this question. Most candidates did well on this part.

Advantages:

- Less administrative burden (versus employer administering plan) because admin done by plan
- Employer has reduced governance role
- Accounting is simpler: pension expense = cash contributions
- Contributions are negotiated so costs are predictable over the course of the contract

5. **Continued**

- May experience a gain on investment return because larger assets under management
- Economies of scale – Reduced valuation costs and investment management costs
- Employer bears less funding risk because benefits can be decreased to offset bad funding levels
- Employer responsibility for funding is reduced to contributions (no special payments)
- Strengthened ties with union since they must work jointly to provide reasonable benefits
- Employees share in responsibility for retirement benefits and appreciate benefits more

Disadvantages:

- Investments tend to be more conservative so require larger contributions over longer haul
- Less control over plan communication and employee appreciation of pension benefit after change
- If Company later chooses to withdraw from the plan, could incur significant litigation costs

(b) Explain the impact of a significant decline in hours worked from the perspective of employers participating in the MEPP.

Commentary on Question:
To receive full points, candidates had to explain how the funded position and normal cost of the plan is impacted by a decline in hours worked.

Most candidates identified that a reduction in hours would lead to lower contributions to finance the deficit. However, many candidates did not indicate that a reduction in hours could influence a part of the workforce to retire or terminate early, leading to an experience loss when early retirement benefit is offered and/or increasing the liquidity needs.

- Where a portion of the contribution is used to cover a deficit, a reduction in the hours worked leads to lower contributions to finance that deficit.
- In addition, a reduction in hours worked, or hours of work available, may influence part of the workforce to retire earlier, leading to an experience loss when subsidized early retirement is offered.
- This risk can be particularly problematic when "retirees" can return to work at the same or a similar trade after receipt of a pension has commenced.

5. Continued

- Also, an increase in retirements, together with increased lump sum termination benefits, can result in (or increase) negative cash flows for mature plans, increasing their liquidity needs and limiting investment alternatives.
- In industries where hiring and layoff practices are based on seniority, a reduction in employment is likely to result in an increase in the average age of working members and in the normal actuarial cost rate (as determined using either a UC or PUC actuarial cost method). This is a lesser concern in those industries where hiring preferences and layoffs are not based on seniority.

(c) Describe recent developments in the U.S. to address MEPPs certified as "Critical and Declining".

Commentary on Question:
To receive full points, candidates had to describe new legislation to address both insolvency of multiemployer funds and PBGC premiums.
Most candidates did not address the PBGC premiums, and many candidates struggled to demonstrate an understanding of the "Critical and Declining" status.

In 2014, a new law was passed in the U.S. that was designed to address the looming insolvency of both struggling large multiemployer funds, as well as the PBGC.

<u>Insolvency of multiemployer funds</u>
- A new status certification was created, called "Critical and Declining", where insolvency is projected within 20 years.
- To help the struggling plans that qualify for this new certification, a provision was enacted that would permit reductions in accrued benefits (technically benefit suspensions) for current and future retirees.
- The provision is quite controversial, and lawsuits are expected before any benefits are reduced.
- If the plan goes insolvent, the reductions implemented by the PBGC would be greater than the ones permitted under the new law, so these reductions are under consideration by some funds as the "lesser of two evils".

<u>PBGC Premiums</u>
- The PBGC was helped somewhat by doubling the per person annual premium, from $13 to $26 (now $28) but there is considerable debate around the timing and amount of additional increases.
- With the looming insolvency of several large funds, the future solvency of the PBGC is at risk. Additional legislation may be enacted to shore up the funding of both the PBGC as well as the funds headed for insolvency.
- As of now, there are at least three competing legislative proposals, all of which involve low-interest loans, to deal with the problem

6. Learning Objectives:

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:

(8a) Perform valuations for special purposes, including:
- (i) Plant termination/windup
- (ii) Accounting valuations
- (iii) Open group valuations
- (iv) Plan mergers, acquisitions and spinoffs

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

Sources:

DA-804-18: FASB Accounting Standards Codification Topic 715

DA-168-17: IFRS and US GAAP: Similarities and Differences, Ch. 5 only

Commentary on Question:

The question tests candidates' understanding of settlement accounting under the U.S. Accounting Standard ASC 715.

Candidates were also expected to know the treatment of settlement under International Accounting Standard IAS 19, Rev. 2011 (IAS 19)

Solution:

(a) Define a settlement under ASC 715.

Commentary on Question:

To receive full credit, candidates needed to identify all points below. Most candidates identified some portion of the definition.

A settlement is defined as a transaction that

- is an irrevocable action,
- relieves the employer (or the plan) of primary responsibility for a pension benefit obligation, and
- eliminates significant risks related to the obligation and the assets used to effect the settlement.

6. Continued

(b) List events that trigger a settlement under ASC 715.

Commentary on Question:
To receive full credit, candidates had to list 4 distinct events. Candidates answered this part very well.

Other relevant responses not listed below also received credit.

- Making lump-sum cash payments to plan participants in exchange for their rights to receive specified pension benefits, where lump sums paid is greater than service cost plus interest cost
- Purchasing annuity contracts, where annuities purchased is greater than service cost plus interest cost
- Plan Wind up / Partial Plan Wind Up
- Plan spin-off

(c) Calculate the settlement charge in 2018 assuming all lump sums are paid on December 31, 2018.

Show all work.

Commentary on Question:
Most candidates did well on this part.

Partial credit was given for a mistaken value that was used in the rest of the calculation.

- Expected PBO at December 31, 2018 = PBO at December 31, 2017 + SC + IC - Pension Payments only = \$25,391,000 + 85,000 + 800,000 - 385,000 = \$25,891,000

- Expected Assets at December 31, 2018 = Assets at December 31, 2017 + EROA + Contributions - Pension Payments only = \$ 23,376,000 + 1,211,000 + 3,625,000 - 385,000 = \$27,827,000

- Unrecognized (Gain)/Loss = Unrecognized (Gain)/Loss at December 31, 2017 - 2018 Amortization = \$4,500,000 - 131,000 = \$4,369,000

- Actual Assets before Settlement = MVA at December 31, 2018 + 2018 LS = \$24,152,000 +2,500,000= \$26,652,000

- PBO before Settlement = PBO at December 31, 2018 + 2018 LS = \$23,300,000 + \$2,000,000 = \$25,300,000

6. **Continued**

- Loss on Assets = $27,827,000 - 26,652,000 = $1,175,000
- Gain on PBO = $25,891,000 - 25,300,000 = $591,000
- Loss on settlement = $2,500,000 - 2,000,000 = $500,000
- Unrecognized (Gain)/Loss after re measurement = $4,369,000-591,000+1,175,000+500,000 = $5,453,000
- PBO at December 31, 2018 including settlement loss= $25,300,000 + 500,000 = $25,800,000
- Pro-rata share of settlement = $2,500,000/25,800,000 = 9.6899%
- Settlement charge = 9.6899% * 5,453,000 = 528,390

(d) Calculate the Accumulated Other Comprehensive Income at December 31, 2018.

Show all work.

Commentary on Question:
To receive full credit, candidates had to indicate that NTO and PSC are zero. Most candidates did well on this part.

Accumulated Other Comprehensive Income (AOCI) at December 31, 2018
- Net Transition (Asset) Obligation $ -
- Prior Service Cost $ -
- <u>Net (Gain)/Loss = $5,453,000-528,390= $ 4,924,610</u>
  AOCI = $4,924,610

(e) Describe the accounting implications of the lump sum window under International Accounting Standard IAS 19, Rev. 2011. No calculations are necessary.

Commentary on Question:
Some candidates struggled with this part, as they did not indicate the threshold and immediate recognition in expense.

- **<u>Timing:</u>** A settlement should be recognized when an entity enters into a transaction that eliminates all further legal or constructive obligation for part or all of the benefits provided under a defined benefit plan.

- **<u>Threshold:</u>** No reference to materiality considerations.

- **<u>Recognition:</u>** Gains/losses created by the settlement are recognized in expense immediately

7. Learning Objectives:

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

Learning Outcomes:

(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.).

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

(9c) Explain and apply relevant qualification standards.

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

(9g) Recommend a course of action to repair a violation of the Standards or the Guides to Professional Conduct.

Sources:
SOA Code of Professional Conduct

SOA Qualification Standards]

Commentary on Question:
This question tests candidates' knowledge of the SOA Code of Professional Conduct and Qualification Standards as they apply to a specific situation.

Solution:

(a) Describe Mr. Smith's potential violations of the SOA Code of Professional Conduct.

Commentary on Question:
Overall, candidates identified most of the violations. For Precept 10, most candidates identified the actuary's uncooperative behavior, but missed that Precept 10 specifically states that unresolved compensation issues cannot be a basis for refusing to cooperate. Precept 10 also specifically states that proprietary items can be excluded from the work product.

Mr. Smith may have violated Precept 1 (Professional Integrity) because Mr. Smith

- did not act competently since he did not release and file the valuation report he was engaged to prepare by his former client Company ABC;
- may not have performed the valuation with the required skill and care;

7. Continued

- may have mislead Company ABC by misrepresenting himself as an actuary that can perform pension consulting services (since his previous work experience was in the group insurance track); and
- did not uphold the reputation of the actuarial profession by refusing to co-operate with the transition of the file to the new actuary

Mr. Smith may have violated Precept 2 (Qualification Standards) because Mr. Smith

- May not have had the relevant experience with the valuation of pension plans;
- May not have taken steps to gain the experience and knowledge through basic and continuing education to meet the applicable qualification standard;
- despite not having the relevant expertise, still attempted to perform the professional services of a pension actuary; and
- may not have kept current with the applicable professional standards.

Mr. Smith may have violated Precept 10 (Courtesy and Cooperation) because Mr. Smith

- May have engaged in unwarranted criticism of the new actuary by insinuating that the new actuary would not understand his work;
- did not co-operate with the client in the filing of the valuation report;
- did not co-operate with the transition of the file to the new actuary;
- did not engage the new actuary to discuss possible alternative solutions in a courteous and cooperative manner;
- made the unpaid bills an issue when Precept 10 (Annotation 10-5) specifically states that unresolved compensation issues cannot be a basis for refusing to cooperate
- made the claim that his work is proprietary when Precept 10 (Annotation 10-5) also specifically states that items of a proprietary nature can be excluded. Mr. Smith did not recognize that generally the nature of the work product (i.e. the valuation report) would not be considered a propriety in nature.

(b) Recommend a course of action for Mr. Smith to resolve each potential violation.

Commentary on Question:
Most candidates recommended that Mr. Smith provide the new actuary with the information requested and release the valuation report to the client. Successful candidates recommended more than just these two resolutions.

Mr. Smith can take the necessary steps to gain the experience and knowledge to meet the applicable qualification standard for pension actuaries;

Mr. Smith can stop performing the services of a pension actuary and only perform the actuarial services that are within the scope of his expertise;

7. Continued

Mr. Smith should provide the necessary information to the new actuary as requested;

Mr. Smith should avoid unjustifiable or improper criticism of other actuaries;

Mr. Smith should release and file the valuation report;

Mr. Smith could remove the proprietary information from the work product;

Mr. Smith could propose alternative options to resolve the matter in a courteous and respectful manner; and

Mr. Smith should consider other avenues to address the unresolved compensation issues as the Code clearly states that unresolved compensation issues cannot be a basis for refusing to cooperate

8. **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.

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

(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

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

(5b) Assess the tradeoffs between different goals.

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

Sources:

DA 172-18 - The Promise of Defined Ambition Plans: Lessons for the United States

Commentary on Question:

Most candidates demonstrated a general understanding of defined ambition plans in Netherlands, but do not know the details about the plans. Overall, candidates struggled with this question.

Solution:

(a) Describe the features of defined ambition plans in the Netherlands.

8. **Continued**

Features of the DA plans are:

1. ***Risk is borne by the participants rather than a corporate sponsor.*** Participants can trade risk with outsiders only through tradable financial instruments.
   a. This is in the interest of workers for two reasons:
      i. Workers are not exposed to their employer's or industry's credit risk.
      ii. By relieving firms of their role as risk sponsor, workers keep firms involved as a distribution platform for occupational pensions.

2. ***Pension entitlement as (deferred) annuity.*** Pension entitlements in the DA environment are defined in terms of deferred annuity units (i.e., lifetime income streams beginning at a particular retirement age). Conversion of capital into annuities occurs when contributions are paid, so participants share longevity risk within the fund's insurance pool.

3. ***Risk-sharing with complete contract in mutual insurer yields variable annuities.*** Participants in DA schemes also share the systematic risks associated with joint asset and liability pools on the basis of complete contracts (pension contract are complete, in the sense that the rules for distributing risk are known in advance and are not subject to discretionary changes). If the value of the fund's aggregate liabilities deviates from the value of aggregate assets, the pension contract specifies how annuity units will be adjusted over time so that the aggregate value of individual pension rights continues to match the value of the assets in the fund.

4. ***Specific forms of risk-sharing contracts.*** The mechanism for allocating mismatch risk in proposed DA contracts involves some specific features.
   a. Since the contract is symmetric, positive shocks in funding are allocated in the same way as are negative shocks.
   b. Proportional adjustments of annuity units are uniform across individuals, which imposes restrictions on participants' risk exposure.
   c. Income streams provided by the variable annuities are adjusted gradually after an unexpected shock causes a mismatch between assets and liabilities.

5. ***Communication and risk management on basis of consumption frame.*** Pension rights are communicated in terms of capital, as well as in terms of the risk profile of an income stream in retirement. In particular, the pension contract specifies how sensitive real income in retirement will be with respect to the various risk factors. As a result of employing a consumption frame for risk management, interest rate risk is actively managed during both the accumulation and payout phases.

8. Continued

6. ***Economic valuation.*** Economic valuation of individual property rights over annuity units can be derived from the stochastic pension promises (i.e., the pension ambitions), which represent the liabilities of the DA scheme.

(b) Describe the strengths and weaknesses of defined ambition plans as compared to traditional defined contribution plans.

Strengths:

- The consumption frame used by DA schemes can improve communication and risk management compared to DC schemes.
  - Communication in terms of lifetime income streams may assist individuals to better understand their financial situations.
  - It may boost the demand for annuities.
  - Viewing income streams as liabilities encourages financial providers to engage in better intertemporal hedging.
- The DA model addresses systematic longevity risk through risk-sharing within a joint liability pool.
- The DA approach allows retirees to continue to benefit from risk premia without being subject to large discrete fluctuations in consumption.
- DA schemes allow employers to play an important role in addressing:
  - Behavioral imperfections by setting defaults – it allows employees with limited financial capabilities to delegate complex decision to professionals,
  - Agency issues in financial markets by collective procurement of financial services from commercial suppliers – it requires financial service providers to act in the interest of participants who tend to lack sufficient expertise to contract complex financial services
  - Market imperfections by selection in insurance by pooling longevity risks.
- Collective DA plans with joint liabilities may be especially useful during the payout phase for DC schemes.
  - To limit valuation problems, risk-sharing of joint liabilities could be limited to the oldest group (e.g., 75 years and older) only.

Weaknesses:

- Risk-sharing with a common liability pool of retirees and employees can lead to intergenerational conflicts about the contract.
- Choosing the discount methodology for valuing joint liabilities can be contentious if annuities are not priced and exchanged fairly in the event the contract is changed or when the annuities are bought.
- Framing of entitlements as annuity units may results in volatile contributions
- DA model does not allow for sufficient tailor-made risk management if adjustments of annuity units are uniform across cohorts.

9. **Learning Objectives:**

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

Learning Outcomes:

(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.

Sources:

DA-123-13: Replacement Ratio Study – A Measurement Tool for Retirement Planning

Commentary on Question:

Part (a) of this question requires candidates to demonstrate understanding of replacement ratio calculations, while part (b) of the question relates to the advantages and disadvantages of using DC balance to purchase an annuity.

Most candidates did well on this question.

Solution:

(a) Calculate the additional savings Employee X will need as of age 55 to meet his retirement goal.

Show all work.

Calculate projected earnings at age 54, just before assumed retirement: 100,000 * 1.03^4 = $112,551
Calculate total annual income required at age 55 for a 70% replacement ratio = $112,551 * 0.7 = 78,786
Calculate PV of 70% replacement ratio = 78,786 * 20 = 1,575,720
Calculate annual social security and other sources of income starting at 55: 30,000 * (1 – 0.06 * 10 years) = 12,000
Calculate PV of benefits of social security benefit at age 55 = 12,000 x 20 = 240,000
Calculate annual DC Contribution rate= 8% employee and 8% employer contributions = 16% of pensionable earnings
Annual net investment return = 5% - 1% = 4%
Calculate accumulation factor:

[1/(return-salary scale) x [1-((1+salary scale)/(1+return))^n]x 〖(1+return)〗^n

1/(0.04-0.03) x [1-((1+0.03)/(1+0.04))^5]x 〖(1+0.04)〗^5 = 5.7379

9. **Continued**

Calculate projected DC balance at 55 = 16,000 x 5.738 = 91,806
Calculate DC balance from amount rolled over: $900,000 * (1.04) ^ 5 = $1,094,988
Calculate PV of total benefit at age 55 social security benefit x PV factor + DC balance = 240,000 + 91,806 + 1,094,988 = 1,426,794
Savings required to each 70% replacement ratio = 1,575,720 – 1,426,794 = 148,926

(b) Describe the advantages and disadvantages of Employee X buying an annuity with his DC balance at retirement.

Buy an annuity
Main advantages:

1. Guaranteed monthly income backed by insurance company
2. You cannot outlive your income
3. You have no investment risks or decision to make

Main disadvantages:

1. You lose flexibility of the timing of withdrawals & no immediate access to the money
2. You lose the possibility of much greater asset returns
3. There is no death benefit (unless specified in the annuity)
4. You are locked in to one insurance company
5. Annuity rates are currently low
6. Employees X has guaranteed monthly social security, so X may not need the guaranteed annuity that DC balance could purchase

10. Learning Objectives:

1. The candidate will be able to analyze different types of registered/qualified 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:

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

(5d) State relationships or recognize contradictions between a sponsor's plan design goals and the retirement risks faced by retirees.

(5f) Design retirement programs that manage retirement risk and are consistent with sponsor objectives.

Sources:

Risk allocation in retirement plans: a better solution, DA-103-13

Converting pension plans from a defined benefit to a defined contribution design – issues to consider in Canada, DA-112-13 (limited to pp 1-6 on the US syllabus)

The next evolution in defined contribution retirement plan design, A guide for DC plan sponsors to implementing retirement income programs

New Retirement Plan Designs for 21st Century Pension Forum, December 2008, pp. 41-56

Commentary on Question:

Commentary listed underneath question component.

10. Continued

Solution:

(a) Propose six changes to the plan provisions described above that would reduce the plan's balance sheet volatility.

Justify your response.

Commentary on Question:
Successful candidates justified each proposed change, rather than simply listing the proposed changes.

- Eliminate automatic indexing of pension benefits. Even though annual indexing was capped at 3% per year, it is an unpredictable feature of a defined benefit plan and can cause fluctuations in funding requirements and gains/losses.
- Change the reduction on early retirement to be actuarially equivalent to the pension at age 65. This eliminates fluctuations in cost based on early retirement experience. Regardless of when an employee retires, the value (liability) of the pension is the same.
- Change from a final earnings benefit to one based on career average earnings or final average earnings. Eliminates volatility caused by salary increases. Salary increases in the future do not affect benefits already accrued so it makes the plan more stable for budgeting (less volatility) and also reduces cost.
- Eliminate portability (the lump sum option) at retirement and require employees to take a pension (less volatility, addresses anti-selection).
- Change definition of earnings to exclude bonuses because bonuses can cause earnings to fluctuate year over year.
- Change eligibility and vesting from immediate to X years of service effectively introducing a waiting period to join the plan and not allowing short-service employees to leave with a benefit. Reduces volatility if fluctuations in turnover of new hires and smooths out term vested liability volatility.

(b) Describe the risks of a defined contribution plan from the perspective of plan participants.

Commentary on Question:
Most candidates did well on this part.

Credit was given additional relevant responses not identified below.

10. Continued

- Investment risk – in a DC pension, the employee is taking on 100% of the investment risk because the investments are self-directed
- Many employees are not sophisticated investors and lack understanding of financial markets
- Longevity risk is the risk of retirees outliving their retirement savings
- Longevity risk can be mitigated if the DC participant purchases an annuity at retirement, however, the markets are generally thin and retirees seem reluctant to purchase annuities due to the interest rate risk exposure
- Risk that employee cannot afford to retire and, therefore, has to work longer than planned and delay retirement. Employee may be in poor health but cannot afford to retire, resulting in negative outcome for both employer and employee

(c) Describe three ways that Company ABC could transition from its defined benefit plan to a defined contribution plan.

Commentary on Question:
Candidates generally did not do as well on this part compared to parts (a) and (b). Successful candidates described 3 distinct ways, as opposed to providing 3 descriptions for only 1 way. Some candidates focused on transition from DB to a hybrid design (such as cash balance), which did not get any credit.

- Closure
  - Close DB to new entrants and allow existing participants to continue to accrue benefits until termination or retirement. New hires will participate in the DC pension plan upon hire.
  - Current employees will not be negatively impacted and you are not changing the pension promise for existing employees (past or future).
  - It will take a long time, possibly 30-40 years, for the DB pension plan to wind down because you could have young employees who are far from retirement age
- Freeze
  - Freeze future accruals in the DB plan for current participants. All employees, including new hires, will accrue DC benefits for future service.
  - More immediate cost savings because all employees accrued DC benefits after a set date
  - If employer is concerned that for some employees close to retirement the new DC formula isn't as generous as the DB formula, then the employer may decide to grandfather some employees and allow them to remain in the DB or offer them an enhanced DC benefit

10. Continued

- Conversion
  - Employees accrue DC benefits for future service and the employer converts DB benefits for past service to a DC account balance
  - Conversion cannot reduce benefits already earned up to the date of conversion
  - High cost to convert DB benefits to DC account balances, particularly if interest rates are low

11. 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:

(6a) Given a specific context, synthesize, evaluate and apply principles and features of executive deferred compensation retirement plans.

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

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

Sources:

Retirement Plans - 401(k)s, IRAs and Other Deferred Compensation Approaches, Allen, 11th Edition, Ch. 14

DA-135-13: Towers Perrin, The Handbook of Executive Benefits, Chapter 15 (Golden Parachutes) pp. 238-244 only

DA-804-13: FASB Accounting Standards Codification Topic 715

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) Evaluate each option from the perspectives of the employee and employer.

No calculations required. Justify your response.

Commentary on Question:

Most candidates provided unique perspectives on both options and from both the employee and employer point of view.

From the Employer perspective:

- Option 1 would potentially increase ongoing accounting costs, with higher present value of enhanced benefit. The actual cost will be dependent on which employees take the offer and their age, service, earnings level, etc.
- Option 1 would require NOC to finance with cash in perpetuity, since this is a pay-as-you-go benefit.

11. Continued

- Option 2 would require a large up-front cash requirement.
- Option 2 would be easier to explain and administer to employees than Option 1.

From the Employee perspective:

- Option 1 would address longevity risk for employees worried about outliving their money.
- Option 1 might present a risk of future employer insolvency, creating concern of benefit security since benefit not funded by trust.
- Under Option 2, the Employee would take on the inflation, investment, and longevity risks.
- Option 2 may signal financial difficulties of the firm, which could play into an employee's decision to stay versus taking the offer.

(b) Calculate the revised fiscal 2018 Net Periodic Pension Cost under U.S. Accounting Standard ASC 715 reflecting Option 1.

Show all work.

Commentary on Question:
Some candidates did not calculate the additional curtailment expense and special termination benefit. Additionally, in calculating the impact of the enhanced benefit, many candidates did not properly determine the accrued benefit to be used in the calculation.

Due to a potential different interpretation of the wording in the 2018 case study, candidates were also given credit for determining the accrued benefit of the enhanced benefit if the ERF was first applied to the benefit before the cap was applied as follows:(2% x \$460,000 x 20) x [1 – (0.25% x 7 x 12)] – (\$3,000 x 20)

1. Determine the expense for the first half of 2018:
   Original expense / 2 = 7,956,000 / 2 = 3,978,000

2. A re-measurement is needed at 7/1/2018 due to the voluntary severance initiative. Roll forward expected amounts to 7/1/2018:
   $PBO_{1/1}$ + (SC / 2) + (IC / 2) – (BPs thru 6/30/18) = $PBO_{7/1exp}$ =
   93,713,000 + (1,872,000 / 2) + (3,572,000 / 2) – 333,000 = 96,102,000

   $UGL_{1/1}$ – (Amort / 2) = $UGL_{7/1exp}$ = 20,677,000 – (2,512,000/2) = 19,421,000

11. Continued

3. Determine the present value of the offered enhanced benefit:
   Calculate SRP accrued benefit per employee =
   2% x \$460,000 x 20 - \$3,000 x 20 = \$124,000
   Reduce for early retirement per employee =
   \$124,000 x [1 – (0.25% x 7 x 12)] = \$97,960

   Calculate enhanced SRP accrued benefit per employee =
   2% x \$460,000 x 23 - \$3,000 x 20 = \$151,600
   Reduce for early retirement per employee =
   \$151,600 x [1 – (0.25% x 4 x 12)] = \$133,408

   Difference due to enhancement per employee = \$133,408 - \$97,960 = \$35,448
   Present value of enhancement per employee = \$35,448 x $\ddot{a}_{55}$ = \$602,616
   Total present value of enhancement for the 10 employees =
   \$602,616 x 10 = \$6,026,160

   The present value of this enhancement will be recognized as a special termination benefit expense in 2018.

4. Remeasure the liability, normal cost, and unrecognized loss at 7/1/2018, reflecting retirements and assumption changes.
   $PBO_{7/1exp}$ + Chg due to ret + Chg due to disc rate + PV of enhancement =
   $PBO_{7/1}$ = 96,102,000 + 1,230,000 + 3,595,000 + 6,026,160 = 106,953,160

   $NC_{1/1}$ + Chg due to ret + Chg due to disc rate = $NC_{7/1}$
   1,872,000 – 400,000 + 59,000 = 1,531,000

   $UGL_{7/1exp}$ + Chg due to disc rate = $UGL_{7/1}$
   19,421,000 + 3,595,000 = 23,016,000

5. A reduction in the average future service triggers curtailment accounting. Since the PBO change due to retirements (before enhancement) is a loss, this impact needs to be recognized immediately in expense (\$1,230,000). Since there is no unrecognized prior service cost to deal with, the total curtailment expense is \$1,230,000.

6. Determine expense for second half of 2018:
   SC = $NC_{7/1}$ / 2 = 1,531,000 / 2 = \$765,500

   IC = [($PBO_{7/1}$ + $NC_{7/1}$ / 2) x 3.50% - Exp BPs (half-yr) x 3.50% / 2] / 2
   = [(106,953,160 + 765,500) x 3.50% - 1,000,000 x 3.50% / 2] / 2
   = 1,876,327

11. **Continued**

Amort. G/L = [$UGL_{7/1}$ – 10% x $PBO_{7/1}$] / AFS / 2
= [23,016,000 – 10,695,316] / 3.8 / 2
= 1,621,143

Total expense for second half of 2018= 4,262,970

7. Calculate total expense for 2018:
   = First-half + Second-half + Curtailment + Special Termination Cost
   = 3,978,000 + 4,262,970 + 1,230,000 + 6,026,160 = 15,497,130

12. **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

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

(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.

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

12. Continued

Sources:
Report of the Task Force on Target Benefit Plans, CIA June 2015

CIA Ed Note Financial Risks Inherent in Multi-Employer Pension Plans and Target Benefit Pension Plans May 2011

Commentary on Question:
This question tests candidates' knowledge of Canadian target benefit plans. Overall, candidates struggled to identify the design features associated with this type of plan.

Solution:
(a) Describe the following design features of a Canadian target benefit plan:

(i) Contribution rate.

(ii) Target benefit level.

(iii) Investment policy.

(iv) Benefit/funding policy.

Commentary on Question:
Candidates struggled to describe the design features in part (i), (ii), and (iii). Canadian target benefit plan designs occupy a large spectrum between defined contribution and defined benefit pension plans. Many candidates indicated that the target benefit level was set in advance and is based on a career average plan that provides a 70% replacement ratio. Even though this may be the goal in certain circumstances, the target benefit level is chosen based on the affordability of the contribution rate which is fixed and set in advance.

Candidates were generally successful in describing the main elements of the benefit/funding policy in part (iv).

12. Continued

(i) Contribution rate:

- Contribution rules are set first, at a fixed level (or within a fixed range).
- Employer contributions are fixed at a pre-determined level or amount to which the employer is willing to commit.
- The level of employer contributions should be clearly set out in the plan text and thus can only be changed by way of a plan amendment.

(ii) Target benefit level:

- An appropriate target benefit is chosen based on what can be afforded by the set contribution rate.
- Benefits also based on given stakeholders' tolerance for (downside) benefit risk and desire for benefit improvements over time.
- Actual benefits may differ from the target.
- The benefit level is defined in advance but not guaranteed.

(iii) Investment policy:

- Defines the rules for selecting and managing the plan's investments.
- Policies and procedures would be similar to a Defined Benefit pension plan.
- By specifying a certain risk/reward, it directly affects affordability of the target benefit as well as the risk of actual benefits falling short of or exceeding the target benefit level.

(iv) Benefit/Funding policy

- The collection of rules that govern periodic assessment of affordability and the method of varying benefits relative to the target (or adjusting the target itself).
  Main elements of the policy:
  1. Affordability test: the valuation basis that is used to decide if the target is affordable at the outset and continues to be affordable at each subsequent date.
  2. Triggers for action: specific thresholds defined in terms of the outcomes of the affordability test, at which point an adjustment needs to be made.
  3. Actions to be taken: Also known as "benefit ladder" or "policy ladder," it is an explicit list of contribution/investment/benefit changes to be made when specific triggers are hit.

(b) Describe three advantages of a Canadian target benefit pension plan versus a traditional defined contribution pension plan.

12. **Continued**

Commentary on Question:
Successful candidates described three advantages from either the perspective of the employee or the plan sponsor.

Credit was awarded for relevant advantages not described below.

Advantage 1:
- Asset pooling provides the advantages of pooling investment and longevity risks as opposed to DC plans where assets are individual accounts.
- Asset pooling also provides plan members with the advantage of no longer having to make investment decisions and as such, those who do not have sufficient knowledge and/or level of engagement to effectively manage retirement assets are no longer disadvantaged. In DC plans, plan members often have to make their own investment decisions.

Advantage 2:
- The target benefit is paid as a lifetime pension. As such, the employee does not solely bear the longevity risk. In a DC plan, a lump sum amount is paid at retirement and the plan member is responsible to select a drawdown method to ensure that the funds will be sufficient for their entire lifetime.

Advantage 3:
- Target benefit pension plans offer a variety of benefit structures, including ancillary benefits such as early retirement and post-retirement death benefits. In a DC plan, an annuity must be purchased with the DC account value to benefit from similar options, which may be very costly for an individual.

13. Learning Objectives:

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:

(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) Plant 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.

Sources:

Pension Risk Transfer: Evaluating Impact and Barriers for De-Risking Strategies (pages 16, 17, 20-27)

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) Describe the opportunities and barriers to pension risk transfer existing in the U.S. regulatory environment.

Commentary on Question:

This part tests candidates' understanding of the legislative factors that have either encouraged or discouraged plan sponsors from completing pension risk transfers. While candidates were able to identify some barriers and opportunities, not many elaborated on the context of each factor. No credit was given for indicating general information about pension risk transfer. The Study Note was based on the US regulations and therefore the model solution reflects the US regulatory environment.

13. **Continued**

Barrier 1 and also Opportunity 1: Legislative uncertainty

- Unknown future regulatory mandates may discourage pension risk transfer because impedes confident decision-making
- May compel employers to transact to minimize exposure to ambiguity and/or because future regulatory changes may make future action more expensive/difficult

Barrier 2: Continued funding relief

- MAP-21 and subsequent extensions (US only) have artificially lowered funding requirements which may discourage plan sponsors to consider pension risk transfer given opportunity to use cash for other corporate purposes
- As sponsors continue to defer contributions (made permissible by funding relief) and become poorly funded, pension risk transfer activities may become more financially demanding

Opportunity 2: Continued funding relief → Improved benefit restriction metrics

- Inflated funding percentages above plan amendment restriction thresholds enable plan sponsors to pursue pension risk transfer, such as lump sum programs

Opportunity 3: PBGC premiums (US only) and costly administrative expenses

- Recent legislation has doubled PBGC premiums significantly increasing the savings opportunity of executing pension risk transfer; in general administrative costs of maintaining pension plan encourage plan sponsors to seek cost mitigating strategies

Opportunity 4: Evolution of accounting approaches - plan sponsors who have early adopted IFRS have more reason to benefit from pension risk transfer

- Mark-to-market asset method lends to increased pension expense volatility thus pension risk transfer would reduce pension exposure given lower total pension assets
- Mark-to-market immediate recognition of gain/loss lends to increased pension expense volatility thus pension risk transfer would reduce pension exposure; sponsors do not have large outstanding AOCI, not subject to US GAAP settlement charge and thereby not as sensitive to pension risk transfer action
- Elimination of expected return encourages pension risk transfer through removal of moral hazard associated with increasing corporate earnings by taking on additional pension risk

Opportunity 5: Mortality improvements

- Recent release of RP-2014 table (US only) has increased accounting obligations and reduced perceived premium associated with annuity purchase

13. **Continued**

- Lag between mortality table used for accounting purposes and for determining IRS minimum lump sum values has created arbitrage opportunity for plan sponsors (US only)
- Avoid further mortality improvements

Additional barriers:

- Accounting impact (if companies have not moved towards mark to market approaches and have to recognize one-time settlement charge and/or have EROA consistently higher than discount rate)
- Low interest rate levels (settling liability at unattractive low rates/returns)
- Low funded status (pension risk transfer further reduces funded status)
- High insurer premium
- Negative publicity

Additional opportunities:

- Reduce operational risk
- Reduce investment risk
- Corporate tax reform (accelerate funding to offset reduction in funded status from pension risk transfer)
- Favorable annuity marketplace pricing

(b) Describe the components of the pension plan "economic liability" used in evaluating the relative cost of a pension risk transfer strategy.

Commentary on Question:
This part (b) tests candidates' candidates understanding of the components of economic liability, or the long-term carrying cost of the pension liability.

Many candidates struggled with this part. Many candidates confused the economic liability with the cost of the pension risk transfer action, such as the lump sum cost or the liability from insurer's perspective; candidates did not indicate the economic liability is how much the plan would cost if the plan sponsor held on to and managed the obligation.

Projected Benefit Obligation (PBO) or Defined Benefit Obligation (DBO) is the baseline liability upon which economic liability is built and only includes costs of future benefit payments

13. **Continued**

Component 1: Credit defaults and downgrades

- US GAAP permit PBO measurement at higher yielding "high-quality" corporate bonds, however insurers may make an adjustment for the associated credit risk and other risks
- Furthermore, assuming only high-quality corporate bond yields ignores the reality of diversified portfolio management including risk-free instruments, as well as investment management expenses

Component 2: Present value of plan operating fees and mandatory insurance levies (e.g. PBGC premiums)

- Inescapable plan administration costs not eliminated until plan termination

Component 3: Longevity improvements

- Cost of potential longevity improvements not captured by mortality tables used for determining accounting liability; insurers have access to up-to-date mortality experience from annuity contracts

Other demographic experience:

- Form of payment election
- Early retirement commencement

Other economic experience:

- COLA increases if linked to index
- Cash balance interest crediting rate