RET DAU Model Solutions
Spring 2018

1. 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:

(3a) Identify risks face 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.

Sources:

Next Evolution in DC Plan Design (Vernon)
Managing Post-Retirement Risks, A Guide to Retirement Planning

Commentary on Question:

Most candidates did well on this question. See below each part for additional commentary.

Solution:

(a) Describe three approaches a retiree could take to generate annual retirement income from a defined contribution plan.

Commentary on Question:

Part (a) tests candidates' knowledge of decumulation methods. Candidates who described three separate methods and how they work received full points; no credit was given for listing a combination of methods as a separate method.

Invest the assets, leave the principal intact
Spend investment earnings
Spend interest and dividends
Realized capital gains are typically reinvested, but available to be spent
Not guaranteed but designed to make money last for life

Systematic withdrawals
Invest the assets and withdraw the principal and investment earnings with a formal method

1. **Continued**

Annuity purchase
Transfer savings to insurance company to guarantee a lifetime retirement income
Survivor benefits and guarantee period can be added

Variable annuity
Guaranteed minimum withdrawal benefit
Return of capital guarantee on death and loss of capital

(b) Describe the advantages of each approach in (a).

Commentary on Question:
Full points were awarded to candidates who described at least four advantages per method. No credit was awarded for listing disadvantages or listing advantages without specifying the income generating approach.

Investment earnings
- Never run out of money
- Entire capital available as inheritance
- Full access to savings
- Full control over investments

Can purchase annuity later

Systematic withdrawals
- Can use withdrawal strategy to ensure income available for all years
- Full access to savings
- Withdrawal control
- Investment control
- High returns lead to higher income

Balance to heirs
Can purchase annuity later

Annuity purchase
- Lifetime income guaranteed
- Can add guarantee or survivor benefit
- Post-retirement increases if indexing purchased
- Not required to invest funds
- Protection against investment volatility
- Protection against cognitive decline and fraud
- Government protection against insurer bankruptcy

Higher income than systematic

1. **Continued**

Variable annuity
- Lifetime income
- Can choose investment allocation
- Funds available for inheritance
- Benefit can increase over time

2. 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.

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

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

Sources:

DA-802-13: Internal Revenue Code 409A and Non-Qualified Plan Design Consideration

DA-803-13: Evaluating Financing Options for Nonqualified Benefit Plans

DA-148-13: Mergers and Acquisitions: Due Diligence of Retirement Plans

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

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) Describe Company ABC's due diligence considerations in respect of Company XYZ's NQP.

Commentary on Question:
Successful candidates described at least 8 considerations related to the due diligence process.

2. **Continued**

The following are some of the due diligence considerations and information required:

1. As part of the due diligence process, Company ABC needs to consider the group of employees the plan covers
2. Documents that Company ABC needs to request include: plan documents, amendments and board resolutions
3. Company ABC also needs to obtain a summary of plan description and any materials supplementing or modifying the description
4. Other information that Company ABC needs to obtain: annual reports, actuarial reports, audited financial statements, etc
5. Regarding the assets and investments Company ABC also needs copies of any agreements with investment managers

Also, here are some of the questions the Company ABC should consider:

1. Are there any provisions that are not in compliance with current law?
2. Is the summary up to date?
3. Are there any significant changes made in the past several years?
4. Are there any prohibited or unusual transactions?
5. How well funded is the plan? (based on buyer's assumptions)

(b) Describe funding options for the NQP.

Commentary on Question:
Candidates generally did well in this part.

Options:

1. Pay as you go: no pre funding
2. Life insurance: company purchases an insurance policy on the life of the plan participant and the cash value asset from the policy offsets the benefit liability
3. Taxable securities – company purchases taxable securities to offset the benefit liability
4. Cash – Company self finance the plan with cash
5. Company stock – company uses stock as a financing vehicle and pays the employee in stock at distribution
6. Secular trust – employer contributions are made on an irrevocable basis for the benefit of participating executives
7. Rabbi trust– company creates an irrevocable trust for the benefit of the members. Trust assets cannot be used for other purposes, however it might be subject to creditors' claims in an event of insolvency.

(c) Recommend a funding option for Company ABC.

Justify your response.

2. Continued

Commentary on Question:
Successful candidates recommended an option that would address Company ABC's concerns about benefit security and stable contributions.

Other responses with appropriate justification received full points.

Pre-funding to make cash contributions/buy taxable securities is the best option for Company ABC:
This allows Company ABC to establish a contribution level that can be maintained (and adjust gradually over time)
Pre-funding also provides benefit security

Company stock might not be the best option – when stock prices fall, contributions might need to be increased in order to maintain a relative stable cost pattern

3. **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:

(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:

804-15 – FASB Accounting Standards Codification Topic 715

Commentary on Question:

The candidate will show how to reflect a mid-year re-measurement under ASC 715-60 due to a plan amendment. The candidate will also demonstrate using new assumptions during a re-measurement.

Solution:

Calculate NOC's revised 2018 Net Periodic Benefit Cost under U.S. Accounting Standard ASC 715, assuming remeasurement on the effective date.

Show all work.

Commentary on Question:

The solution below uses simple interest. Candidates also received full points for using compound interest.

- **APBO @ 4/1/2018 before assumption & plan change:**
  Expected APBO = (APBO + SC*3/12)*(1+int*3/12) - BP*(1+int *3/12/2) =
  (3,328,918 + 111,973 * 0.25) *(1+0.035*0.25) - 16,250*(1+0.035*0.125) =
  $3,369,963

- **Prior Service Cost @ 4/1/2018 before assumption change & plan change:**
  (PSC – Amortization of PSC*3/12) = 3,908 - 2,682*0.25 = $3,238

- (Gain)/Loss @ 4/1/2018 before assumption & plan change:
  ((G)/L – Amortization (G)/L*3/12) = 766,788 - 43,520*0.25 = $755,908

3. Continued

- **APBO @ 4/1/2018 after assumption change & before plan change:**

  APBO must be re-measured at 4/1/2018 based on the new discount rate of 4.0% and duration of plan liability of 13.

  Expected APBO / (1.13 ^ (50/100)) = $3,369,963 / (1.13^0.5) = $3,170,195

- **SC @ 4/1/2018 after assumption change & before plan change:**
  SC is re-measured based on the new discount rate of 4.0% and SC duration of 20.
  (SC * (1+ 0.035 * 3/12) / ((1 + 20 / 100) ^ 0.5) = 111,973 * (1 + 0.035 * 0.25) / (1.2 ^ 0.5) = $103,111

- **(Gain)/Loss @ 4/1/2018 after assumption change & before plan change:**
  (G)/L before assumption change + decrease in APBO due to assumption change =
  3,170,195 - 3,369,963 + 755,908 = $556,140

- **APBO @ 4/1/2018 after assumption change & plan change:**
  APBO@4.0% x 80% = $3,170,195 * 0.8 = $2,536,156

- **SC @ 4/1/2018 after assumption change & plan change:**
  SC@4.0% x 80% = $103,111 * 0.8 = $82,489

- The plan change is a negative plan amendment that offsets any existing Prior service cost and is then need to be re-amortized over the expected future working lifetime to full eligibility.
- **Prior Service Cost @ 4/1/2018 after assumption & plan change**:
  PSC before plan change + decrease in APBO due to plan change =
  = 3,238 + (2,536,156 - 3,170,195) = ($630,801)

- **Total Net Periodic Benefit Cost (NPBC) for 1/1/2018 – 3/31/2018:**
  SC = 111,973 * 3/12 = $27,993

  IC = 119,294 * 3/12 = $29,824

  Amortization of PSC = 2,682 * 3/12 = $671

  Amortization of (G)/L = 43,520 * 3/12 = $10,880

  NPBC (1/1/2018 – 3/31/2018) = 27,993 + 29,824 + 671 + 10,880 = $69,368

- **Total Net Periodic Benefit Cost (NPBC) for 4/1/2018 – 12/31/2018:**
  SC = 82,489 * 9/12 = 61,867

3. **Continued**

IC = (APBO after plan change + SC after plan change * 9/12) x new interest x 9/12 – (Expected benefit payments x 80% x 9/12) x new interest x 9/24 = (2,536,156 + 82,489 * 0.75) * 0.04 * 0.75 - (65,000 * 0.8 * 0.75) * 0.04 * 9/24 = $77,356

Amortization of PSC = (PSC after plan change) / 6.97 * 9/12 =
= (630,801) / 6.97 * 0.75 = ($67,877)

Amortization of (G)/L = ((G)/L after assumption change – 10% of APBO) / 9.97 * 9/12 = (556,140 - 0.1 * 2,536,156) * 0.75 / 9.97 = $22,758

NPBC (4/1/2018 – 12/31/2018) = 61,867 + 77,356 + (67,877 + 22,758 = $94,104

Total 2018 NPBC = NPBC (1/1/2018 – 3/31/2018) + NPBC (4/1/2018 – 12/31/2018) = = 69,368 + 94,104 = $163,472

4. **Learning Objectives:**

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.

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

Learning Outcomes:

(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.

(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.

(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

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

Sources:

DA-127-13: The Economics of State and Local Pensions

DA-158-15: New Brunswick's New Shared Risk Pension Plan

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

4. Continued

Commentary on Question:
Commentary listed underneath question component.

Solution:

(a) Describe the plan design features of public sector pension plans that could lead to higher costs relative to private sector pension plans.

Commentary on Question:
Most candidates successfully described the plan design features that could contribute to higher costs in public sector plans.

- Public sector plans still tend to be predominantly DB plans while the private sector is trending to DC plans.
- Majority of public sector plans are FAE plans with higher average accrual rates.
- Many public sector plans tend to include COLA provisions.
- Public sector plans tend to have subsidized early retirement reduction provisions.
- During periods with favourable investment returns, the surplus can be used to enhance benefits, but state, municipal or provincial law may not allow benefits to be decreased during periods of poor investment return
- Public sector employees may not covered by Social Security so the plans need to make up the difference.
- Public sector plans may include a deferred retirement option plan (DROP plan), which can increase costs.

(b) Identify the measures governments have enacted to help reduce the cost of public sector pension plans.

Commentary on Question:
Successful candidates identified potential changes to plan provisions as well as potential changes to plan design. Points were awarded for reasonable answers not specifically noted below. No points were awarded for identifying accounting changes.

- Reduce benefits of new entrants coming into the plan
- Reduce (freeze) future benefit accrual for all employees
- Reduce or put caps on the COLA
- Reduce early retirement reduction or adjust them to be actuarially neutral
- Providing employees the option of a DB plan or a DC plan
- Raising normal retirement age
- Increasing vesting/eligibility requirements
- Increasing the years used to determine the final average salary

4. **Continued**

- Introducing anti-spiking rules
- Change definition of earnings
- Increasing employee contributions
- Introduce a target benefit or shared risk plan

(c) Describe how the characteristics of the New Brunswick Shared Risk Pension Plan can help mitigate the cost challenges faced by public sector plans.

Commentary on Question:
The solution references the New Brunswick Shared Risk Plan. Candidates were also awarded points for providing the conceptual designs of a shared risk program.

- The New Brunswick Shared Risk Plan was designed to split benefits into highly secure base benefit and moderately secure ancillary benefits.
    - Examples of splits between secure base benefits and ancillary benefits include:
        - Shared risk plans have a career average benefits, but can index earning to wage growth or inflation if plan finances exceed specific benchmarks
        - Shared risk plans may only grant CPI indexation to retirees if plan finances exceed specific benchmarks

- Shared Risk Plan has pre-determined actions to change future benefits, contributions and assets allocation in response to a plan's financial position.

- If the plan has a deficit/does not meet certain criteria, there is an orderly reduction of benefits.
    - Examples of reductions in benefits:
        - Increase contribution rates split evenly between ER and EE
        - Change rules for calculating early retirement to full actuarial reduction
        - Reduce base benefits for future service
        - Reduce base benefits for all service

- Improvements that can be granted if plan has a surplus/meets certain criteria
    - Examples of improvements:
        - Reverse previous deficit recovery measures
        - Index pensions and base benefit accruals
        - Increase base benefits of retirees up, if required, to provide the base pension as a FAE pension
        - Provide lump sum payments to offset past shortfalls

4. Continued

- New risk management framework to keep plans on track
  - Examples of risk management frameworks:
    - Stress test to show whether the plan will be funded at certain thresholds
    - If plan doesn't pass stress tests, must modify investment, funding or benefits rules until it passes
    - Annual review; meant to find changes to financial positions much earlier

- The Shared Risk Plan regulatory program also includes funded ratio yardsticks
  - Examples of funded ration yardsticks:
    - For new plans, actuary needs to project funded status over 15 years and plan must be 100% funded in each year
    - After initial valuation, plan must be at 100% after 15 years and cannot be below 100% two years in a row

5. **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:

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

(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

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

(4d) Analyze the issues related to plan provisions that cannot be removed.

Sources:
Implementing early retirement incentive programs: a step-by-step guide (DA-154-15)

Commentary on Question:
This question pertains to the Case Study. Candidates were expected to use the information in the case study when describing considerations and critiquing NOC's approach.

Solution:

(a) Describe considerations when designing an ERIP for NOC's employees.

Commentary on Question:
The study note included examples of how to select eligibility groups using age and service criteria. The study note also gives examples of enhanced benefits that could be part of an ERIP. Successful candidates followed a similar rationale and refer to the age/service tables and plan provisions in the case study.

Candidates received points for recommending other eligibility criteria that were reasonable and justified based on the case study.

Determine your eligibility criteria for the ERIP:
- When determining eligibility, consider your business objectives
- Look at the pension and retiree health plan to determine eligibility
- Under NOC's salaried pension plan, earliest retirement date is 55 with 5 years of service (but unreduced date is 62). Could use 55 & 5 as eligibility for ERIP, but then employees wouldn't be eligible for retiree health plan

5. Continued

- Under NOC's hourly pension plan, earliest retirement date is 55 with 10 years of service (and unreduced date is 62 with 30 years of service)
- SRP – decide whether high earners/executives will be part of the ERIP
- For example, could select age 55 & 10 years of service for ERIP eligibility and offer pension enhancements. Then the employees would be eligible for retiree health care plan.
- What is NOC's target number of employees to accept the ERIP? NOC will want to ensure that the eligibility criteria captures enough employees so that NOC achieves their objectives. For example, eligibility group should be approximately twice as large as the number of employees NOC is targeting to reduce
- Ensure the eligibility criteria is strictly objective
- Loss of key talent may be a concern for NOC since they cannot pick which employees accept the ERIP

Determine the program offering:

- ERIP must motivate individuals to participate by offering incentives
- Could offer a type of pension plan enhancement
- For salaried employees, could offer unreduced pension at 55 or reduce the ERFs. For salaried employees over 62, they would not get any benefit from reduced ERFs so may need to offer something different like a compensation adjustment or lump sum termination payment
- For hourly employees, could offer age or service credit to reduce the ERFs
- For employees who aren't eligible for retiree health plan, could extend active health benefits or extend eligibility for retiree health plan (e.g., if ERIP eligibility was 55 & 5 then some individuals might not qualify for retiree health plan)
- Offer lump sum termination payment, for example 2 weeks of salary for each year of service to a maximum of 30 weeks. Consider tax implications of possible lump sum payments vs. pension enhancements

(b) Describe steps to implement an ERIP.

1) Select the retirement effective date, which is the employee's last day of work. Recommend the period of time between the end of the window and the retirement effective date be kept as short as possible.
2) Determine the length of the retirement incentive window. Recommend a minimum of 45 days for employees to consider the offer.

5. Continued

3) Analyze the costs and savings of the program to ensure the ERIP meets NOC's financial objectives. Balance attractiveness of benefits with NOC's objective to reduce workforce costs.
   - Project the costs over 5 to 10 years
   - Consider actuarial fees
   - Consider different scenarios, like what happens if all eligible employees accept the offer
4) Prepare a waiver form. All employees should be required to sign a waiver form to protect the company from lawsuits. The waiver should be reviewed by legal counsel.
5) Prepare the announcement. It should include details on eligibility, explain the program and benefits being offered, the timeline and how employees accept or decline.
   - Include a statement that the organization has no current plans to offer other ERIPs in the future but reserves the right to do so
6) Prepare pension estimates so employees can see what the benefits would be
7) Send the announcement, ensure all employees receive a consistent message and be prepared for questions

(c) Critique NOC's approach to reducing its workforce from a human resource perspective.

Justify your response.

Commentary on Question:
Successful candidates used the case study to identify specifics about the salaried workforce (e.g., engineers) that NOC would want to retain. To receive full points, candidates had to address both the salaried workforce and the union hourly workforce.

Salaried workforce:
- The salaried workforce is highly skilled with a minimum of an undergraduate degree required and some employees have higher degrees
- A voluntary ERIP does not make sense for the salaried workforce because NOC would want to choose specific employees (either higher paid or under-performers), but under the ERIP NOC cannot control who takes the offer and who doesn't
- Employees that NOC may want to keep may decide to retire, and those employees they want to leave may decide to stay
- Or all employees in a single department may leave at the same time, which would be a risk to NOC's operations

5. **Continued**

- Half of the salaried employees are hired directly from university while the other half are mid-career hires that come from competitors. They will probably have a wide range of salaries, which makes designing an ERIP more difficult if you are trying to replace higher paid employees with lower paid employees
- NOC is better to do an involuntary program so they can choose who leaves

Union hourly workforce:

- Involuntary layoffs could hurt employee morale
- While the involuntary layoffs would allow NOC to target specific employees, there is limited value since the hourly workforce is fairly homogenous and there is probably not much different between high and low performers
- Typically in a union, the older employees have more seniority and higher salaries. Involuntary layoffs in unions usually target those with the least seniority, so shorter service/lower paid employees would probably be targeted. This doesn't help NOC reduce workforce costs. NOC would be better to target older, higher paid employees.
- A voluntary ERIP would make more sense and be better received

6. 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:

(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

(8g) Describe how a plan's funded status can impact union negotiations and multiemployer plans.

Sources:

DA-113-16: Multi-Employer Plans

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

Commentary on Question:

The question tests the candidates' knowledge on implications for employers and employees of converting a single employer pension plan into a multi-employer pension plan.

Solution:

(a) Describe the advantages and disadvantages of the proposal from the perspectives of:

- (i) Company ABC.

- (ii) NU members employed by Company ABC.

Commentary on Question:

In general, candidates were better able to identify advantages than disadvantages. No points were awarded for writing about what would happen with the frozen ABC Hourly Plan, as this was not the focus of the question.

6. **Continued**

<u>Advantages from ABC's perspective:</u>

- Reduced oversight and administrative burden since the plan is operated by a separate board of trustees
- Initially, lower required contribution
- Contributions tend to be more predictable for multiemployer plans
- Economies of scale can make multiemployer plans more efficient
- Benefits are more competitive to recruit NU members

<u>Disadvantages from ABC's perspective:</u>

- May lose some control on union negotiations
- ABC becomes subject to the risk that the contributions to the multiemployer plan do not cover the cost of benefits accrued -> which can lead to higher contribution rates
- This risk is exacerbated given that the majority of the plan is closed which may result in an increase in the average age (yielding higher normal cost) and a decrease in hours worked (yielding a smaller contribution base)

<u>Advantages from ABC employees who are NU members' perspective:</u>

- Larger benefit accruals
- Benefits are reasonably secure and predictable
- Benefit is more portable for NU members moving to another NU participating employer
- Stronger connection between the union and NU members working for ABC
- NU has strong representation in the Plan (the Board of Trustees includes union members)

<u>Disadvantages from ABC employees who are NU members' perspective:</u>

- NU becomes subject to the risk that the contributions to the multiemployer plan do not cover the cost of benefits accrued (which can lead to a reduction in benefit accrual rate)
- This risk is exacerbated given that the majority of the plan is closed which may result in an increase in the average age (yielding higher normal cost) and a decrease in hours worked (yielding a smaller contribution base)
- There is intergenerational risk: contributions based on current active participant hours may be financing prior gains and losses
- This risk is exacerbated given that the plan is mostly closed, but still open for ABC union members

6. Continued

(b) Evaluate the implications, if the proposal is accepted, for Company ABC and NU members employed by Company ABC for each of the following scenarios:

(i) Hours worked by non-ABC Hourly Plan participants in the NU Plan decrease by 30%.

(ii) Average age of active participants in the NU Plan increases by 3 years.

Commentary on Question:
Many candidates struggled with part (b). This part required candidates to think about the situation and write down the implications. Candidates needed to demonstrate their ability to utilize knowledge.

<u>If Hours are reduced for other NU employers by 30%:</u>

- Contributions from employers to the multiemployer plan are determined by the number of hours worked
- To the extent that the required contributions is used to finance a deficit, the drop in hours from other employers creates a risk for those deficits not to be covered
- A reduction in hours worked, or hours of work available, may influence retirement patterns, which could generate actuarial losses due to earlier than expected retirement, exacerbating the potential for a larger unfunded deficit
- If ABC hours remain constant, and a deficit is to be funded, ABC carries a higher portion of the burden given that they have a larger portion of the hours credited to the plan, yielding a potential increase in the contribution rate
- If instead, benefits are cut to make up for any potential deficits, ABC union members will get a reduction in their benefits.

<u>If average age of participants increase:</u>

- Contributions from employers to the multiemployer plan are calculated to cover the cost of benefits accrued plus to finance any deficits
- The cost of benefits accrued (especially if measured under a Unit Credit cost method) will increase if the average age of the active population of the plan increases
- This reduces the margin between the plan contribution and the cost of accruals. A lower margin means that the plan is not able to finance deficits and cannot absorb potential actuarial losses
- Since ABC union members are still entering the plan, ABC likely holds a constant average age. Thus, the cost of accruals in their benefits is lower than the rest of the remaining employers
- To finance the higher cost or overall plan accruals, ABC may be subject to a higher contribution rate
- If instead, benefits are cut to make up for any potential deficits, ABC union members will get a reduction in their benefits.

7. 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.

(8b) Analyze, recommend, and defend an appropriate funding method and asset valuation method in line with the sponsor's investment policy and funding goals.

(8h) Perform and interpret the results of projections for short and long range planning including the effect of proposed plan changes.

Sources:

DA-137-13: Pension Projections

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

DA-136-17: Selection of Actuarial Assumptions, Consultant Resource Manual, SOA Version, Mercer (excluding pp. 14-25, pp. 29-32 and pp. 68-109)

Commentary on Question:

This question tests candidates' understanding of assumption selection for and impact of risk transfer on pension projections.

Overall, candidates did well on this question.

Solution:

(a) Describe the assumptions required to perform the 10 year projection.

Commentary on Question:
Successful students incorporated the case study in their response.

The descriptions below are not exhaustive of assumptions and considerations; other valid points also received credit.

7. Continued

A new entrant assumption is now needed (not needed for annual valuations).

Number of expected new entrants during forecast (may be based on keeping total workforce constant in future, or slowly increasing/decreasing).

Sex assumption for new entrants (percentage male/female).

Hire age for new entrants.

Starting salary for new entrants.

It may be appropriate to use range of hire ages and starting salaries for new entrants based on actual hiring patterns.

The salary scale assumption should be re-evaluated for 10 year projection period to make as realistic as possible, especially in short term, by incorporating expected inflation / productivity impact.

Consideration should be given to varying the salary assumption by age: salary scale for valuation purposes likely a long-term assumption over expected working lifetime of employees which uses one constant inflation rate in all future calendar years (but may have different merit rates varying by age) .

Verify if the inflation assumption is appropriate for 10 year period (this will impact max salary amounts, future expenses, and interact with annual salary increases). The inflation assumption could reflect optimistic or pessimistic view in line with current economic outlook.

Mortality assumption should reflect best estimate of current population's expected mortality. The current 83 GAM seems outdated so should be analyzed.

Mortality rates should include a projection scale over forecast period.

The termination rates should be re-evaluated. The last study is likely outdated (since ran through 2005).

The termination assumption should be updated and should reflect the higher than expected turnover rates over the past 5 years that NOC has experienced.

Ensure that the termination rates are based on select and ultimate assumptions. (This assumption will impact all the new entrants and current employees)

7. Continued

The assumption should incorporate any adjustments needed to termination rates associated with any future expected changes in workforce.

The retirement rates should be updated (change from single age) based on recent plan experience

Retirement rates for actives should extend from earliest retirement age (55) to latest expected retirement age (likely beyond 62 as that has been observed in plan)

Analyze % married assumption for actives as that will impact the forms of payment for future retirees

Analyze the age difference assumption between participants and spouses to get better expected future payout projections

Verify if disability rates should be added; there is no separate disability benefit, but could impact participant counts

Asset return assumption should be based on expectations by year over forecast period (not just long-term expectation as in valuation)

A contribution assumption will be need to project actuarially determined contribution for during the forecast period.

Will need to incorporate expected timing of contributions during forecast (mid-year, end of year?).

Discount rate assumptions over forecast period are also needed.

Determine whether deterministic or stochastic projections will be performed.

If deterministic projections completed, may need to disclose sensitivity of future amounts to changes in items such as discount rate and asset return.

Verification if all expected future expenses will continue to be paid for by the company.

(b) Describe how the projection may differ when incorporating the impact of the retiree buy-out.

No calculations required.

7. Continued

Commentary on Question:
The descriptions below are not exhaustive of assumptions and considerations; other valid points also received credit.

Projection will be the same up until date of annuity purchase transaction

Projection will incorporate premium charged by insurance company for retiree buy out

Insurance company premium will include costs associated with taking on administrative duties (not just value of future payments)

Insurance company will likely use more conservative discount rate assumption than NOC

Insurance company may use more up-to-date (appear to be more conservative) longevity assumption than NOC

PBO will change after annuity purchase (decreased by the number of members/retirees included in buy out)

Funding liability will change after annuity purchase (decreased by number of members/retirees included in retiree buy out)

Asset value will be reduced at annuity purchase date by cost of annuities

Expect funded status to be worse after annuity purchase since insurance company will charge premium on the buy out.

The deterioration of the plan's funded status would likely result in a higher immediate contribution requirement

The lower asset value expected to result in lower EROA component of expense.

The lower PBO expected to result in lower IC component of expense.

The plan will have additional administrative costs associated with implementation of buy-out (should share with NOC even if expenses not paid out of plan trust). The plan will have revised future benefit payments from pension plan (after affected retirees removed).

7. Continued

Future expected required contributions will change to be based on revised asset and liability amounts.

Future discount rate may shift due to updated expected benefit payment stream

Under IASB, settlement charge will be triggered due to annuity purchase.

IASB settlement charge equal to difference between premium charged by insurance company and the DBO removed from books for the retirees in buy-out.

IASB settlement charge will be included as part of service cost in P&L.

8. **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:

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

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

Sources:

Strategic Moves: The Exchange Option for Retirees
Savings Medicare Beneficiaries Need for Health Expenses

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) Explain the differences in cost and coverage between pre-65 and post-65 retirees when offering access to a private exchange.

Commentary on Question:
To receive full points, candidates needed to identify at least four differences and explain why the difference exists. Most candidates explained differences for one or two differences, but struggled to identify more.

Pre-65 retirees have more uncertainty around private exchanges because the market is not stable or secure. Because the exchanges are relatively new for pre-65 retirees, premiums can be volatile and coverage could vary from year to year. The marketplace for pre-65 retirees is not as built up which leads to less selection. Pre-65 retirees can also face a difference in coverage if active employees are not on an exchange.

Post-65 retirees have access to Medicare which makes the coverage options more geared towards supplemental plans. This also leads to the coverage being less expensive than pre-65 retirees.

(b) Identify four factors used to determine how much money an individual needs in retirement to cover health insurance premiums and expenses.

Commentary on Question:
Most candidates did well on part (b). Some candidates identified factors that did not relate to how much money an individual would need for health care. For example how much savings the individual has does not affect how much they need for health care.

8. Continued

Retirement age
Length of life in retirement
Availability and source of health coverage
Rate at which health care costs increase

(c) Explain how a participant of Company ABC's health care plan could estimate three of the factors listed in part (b).

Commentary on Question:
Candidates received credit if they explained a reasonable way to estimate, even if the factor chosen did not receive credit in part (b).

Retirement age – can use the Social Security Normal Retirement Age, or the company's retirement plan's Normal Retirement Age, or a combination
Length of life – use mortality table, via an online tool, can also combine with family history
Availability and source of health coverage – can use currently available coverage and options
Rate at which health care costs increase – use historical increases to project future increases

(d) Describe four actions Company ABC can take to make switching to an exchange easier for retirees.

Commentary on Question:
To receive full credit, candidates needed to describe 4 distinct actions. Some candidates provided multiple actions that represented the same concept (for example various ways to educate employees).

Survey the landscape – can start with a feasibility study to look at costs and coverage
Provide large networks – make sure insurers have a broad network so retirees can use the doctors and hospitals they prefer
Make sure support exists – ensure there are enough call center employees and they are prepared to answer questions
Educate employees – communicate the change early and provide education in various formats

9. **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

(5k) Evaluate and incorporate, as appropriate, different social insurance and employer sponsored plan types and features that occur internationally in providing recommendations.

(5l) Give examples of plans that are appropriate for multinational companies and their employees including third country nationals and expatriates.

(5m) Recommend an appropriate plan type and plan design features for providing retirement benefits and defend the recommendations.

Sources:

Retirement Plan – Allen 11th edition Ch 2, 11

DA 130-13: International (offshore) Pension Plans – A Growing Trend

Morneau Shepell Handbook of Canadian Pension and Benefit Plans 16th Edition – Ch. 1-2

Fundamentals of Private Pensions, McGill, 9th edition – Ch 5

Commentary on Question:

This question tests a candidate's ability to evaluate and make a recommendation despite many unknown parameters. Similar situations as presented in this question happen regularly with international assignments.

9. Continued

Solution:

(a) Evaluate the plan design features for each participation option with respect to the benefit level and security from the perspective of the executive.

Justify your response.

Commentary on Question:
Successful candidates went beyond listing the theoretical differences between the options and applied numbers to project out reasonable scenarios in order to make a recommendation.

The model solution below assumes simplistic assumptions; credit was also awarded for other reasonable assumption projections.

Design Features *(using first column of provided table)*:

- Type of Program: The Home plan is a DB plan where the longevity and investment risk are borne by the employer (in contrast to the Host DC plan). The Host + International Plan combination lead to several sources of income at retirement.
- Benefit accrual: The Home plan formula is based on final year's earnings only which means all of the weight is on the last year of earnings (future salary rates are unknown). The International Pension Plan acts as a floor and protects the executive by offering the maximum between the DB plan and the DC plan.
- Employee Contribution: The employee contribution under the DB plan is mandatory whereas it is voluntary under the DC plan. The executive can elect to not contribute anything under the DC plan. The employee contributes 5% of base salary only under the DB but 5% of salary + bonus under the DC if she elects to contribute.
- Earnings definition: Earnings definition under the home plan (DB) is less generous than under the DC plan as it includes only base salary (DC plan also includes bonus)
- Social Security Benefit: Executive will have social security benefit for service in the home country whereas will not be entitled to any social security benefits during her stay in the host location. If she chooses the home option, she will have reached 30 years of service with her company pension above $50,000 where the benefit is clawed back and therefore depending on her income level at retirement, she will not be entitled to the full social security amount.
- Funding Level: DB plan not fully funded leading to funding risk to employee. The DC plan is fully funded. The international plan is fully unfunded which leads to even more funding risk to the executive should the Company not have sufficient funds to pay for the future benefit entitlements.

9. Continued

- **Benefit Levels:**
  - *Future salary & bonus increases are unknown. Assume 0% increase in earnings, 0% discount rate, and 0% investment return.*
  - DB: Total benefit accrual = 1.5% x $150,000 x 30 years = $67,500, of which 10 years for the international assignment= $22,500.
  - DB: Executive is also entitled to social security benefits but these will be clawed back because her retirement income will be more than $50,000. The social security benefit will be around $12,000 (clawed back by 3 x $1,000 for each $5,000 increment of retirement income above $50,000)
  - DC: Max benefit if executive contributes 5%: 20% x $250,000 (10% core employer + 5% required employee + 5% employer match on base salary + bonus) x 10 years = $500,000. The employee pays $5,000 more per annum under the DC plan compared to the DB plan ($50,000 in total for the assignment).
  - The annuity conversion rate is not known to the executive at the time of her transfer when she needs to make a decision. She must decide which option is more favourable. Assuming a similar employee contribution rate as the DB plan, and ignoring investment returns, the DC lump sum would be: $250,000 (company core contribution) + (6% x $250,000 x 10 years) = $400,000. Comparing to the DB retirement income during the 10 years of assignment of $22,500 (excl Social Security), the annuity conversion rate would need to be more than ~18 for the DB plan to be more generous during the 10 years of assignment. The executive could contribute more to maximize employer contributions as well as the DC account balance at retirement.

(b) Recommend an option for the executive using your evaluation from part (a).

Justify your response.

Commentary on Question:
Most candidates selected the Host Plan + International Plan combination. Candidates received full credit for selecting the Home Plan if they provided appropriate justification.

- The international plan formula protects her by providing her with the maximum of 2 formulas.
- She is comfortable that her investment knowledge will lead to good investment returns during her assignment which will exceed the value of the home plan accruals.
- If her investment decisions in the host DC plan during her assignment lead to a lower value than having stayed in the home plan during her assignment then the international plan will top up any difference.

9. **Continued**

- She is not concerned by losing out on social security benefits or by receiving retirement income from multiple sources. She likes the flexibility of getting part of her pension as a lump sum and part of her pension as

(c) Critique each option from the perspective of Company ABC.

Justify your response.

Terminate IPP:

- May create attraction / retention issues amongst international employees
- May free up internal resources and/or external resources who are tasked with tracking complex pension accruals
- May need to do special accounting treatment
- May free up cash resources

Externalise the IPP:

- May limit internal resources but likely increase external vendor costs
- Would require potentially large cash payment up front to fully fund plan.
- Would need to decide which types of services are provided externally vs internally – bundled vs unbundled. Need to monitor vendor services.
- Would need to decide how to fund plan – trust vs insurance & implement funding policy

10. **Learning Objectives:**

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

Learning Outcomes:

(9c) Explain and apply relevant qualification standards.

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

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

Sources:

DA-808-17: ASOP 34, Actuarial Practice Concerning Retirement Plan Benefits in Domestic Relations Actions, pp. 1-16

SOA Code of Professional Conduct

Commentary on Question:

This question tests candidates' understanding of ASOP 34 as well as how to handle conflicts of interest.

Overall, candidates showed a good understanding on how to handle real or perceived conflicts of interest. Candidates struggled with the guidance around domestic relations orders provided in the ASOPs.

Solution:

(a) List the ways an actuary may assist with domestic relations orders, as described in Actuarial Standard of Practice No. 34 (ASOP 34), Actuarial Practice Concerning Retirement Plan Benefits in Domestic Relations Actions.

Commentary on Question:

To receive full credit for part (a), candidates needed to provide at least 8 separate ways an actuary may assist with domestic relations orders (DROs). Other valid tasks not listed below would also receive credit. Most candidates did not list enough tasks to receive full credit for this part.

- Draft a DRO
- Review work of another expert who drafted DRO
- Participate in negotiations with another expert concerning DRO
- Provide expert testimony regarding DRO
- Provide guidance on division of retirement plan benefits
- Calculate covered party's accrued benefit at a given date

10. Continued

- Perform actuarial valuation of retirement plan benefits covered by DRO
- Implement a DRO for plan sponsor (prepare final benefit calculation)

(b) Describe the benefit provisions that should be addressed in a domestic relations order to ensure the benefits payable to each party will be definitely determinable.

Commentary on Question:
To receive full credit for part (b), candidates needed to both list and describe benefit provisions which should be addressed in a domestic relations order. The question was not looking for items related to the benefit formula, but instead for provisions concerning how and when the benefit could be paid and applicable adjustments to the amount paid.

Early Retirement subsidies: if plan provides early retirement subsidies to participant, DRO should specify what/if any early retirement subsidies will be shared with the alternate payee

Benefit commencement date for alternate payee: DRO should specify when alternate payee can start payments. Does it have to be the same as participant's starting date, or can it be as early as participant's early retirement date?

Actuarial equivalence factors: what interest and mortality factors will be used to adjust the alternate payee's portion of life annuity to an annuity payable for the alternate payee's lifetime

Death of either party prior to benefit commencement: what benefits will be payable to alternate payee (or participant) if one party dies before starting retirement payments under the DRO?

(c) Describe considerations in determining if you can perform work related to a domestic relations order based on ASOP 34 and Precept 7 of the Society of Actuaries Code of Professional Conduct.

Commentary on Question:
To receive full credit for part (c), candidates needed to recognize that a conflict of interest existed, define conflict of interest, and provide the steps needed to conduct actuarial work when a conflict of interest exist.

Precept 7 deals with conflicts of interest

Conflict of interest exists whenever actuary's objectivity, or duty owed to client or employer, may be impaired by competing interests

10. **Continued**

If the relative is close, this relationship could provide a bias, making it difficult for actuary to be objective

Before doing work, actuary must ensure his ability to act fairly is unimpaired

Before doing work, actuary must disclose conflict to all present and known prospective principals (“all known direct users”) whose interests would be impacted

All such principals must expressly agree to the performance of actuarial services by the actuary before he may take on assignment

11. **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:

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

Sources:

Alternative Approaches to Calculating Service and Interest Cost under FASB ASC Topic 715, KPMG

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) Describe the differences between the Traditional Approach and the Spot Rate Approach for calculating Net Periodic Pension Cost under U.S. Accounting Standard ASC 715.

Commentary on Question:
Most candidates described how Service Cost and Interest Cost are calculated under the two methods.

Under the Traditional Approach,

- A single weighted average discount rate is used in calculating the Service Cost and Interest Cost.
- Service Cost is calculated by discounting all of the incremental future cash flows associated with benefits projected to be earned during the ensuing period using the single weighted average discount rate.
- Interest cost is calculated by multiplying the beginning of period obligation (reduced by weighted projected benefit payments during the period) by the single weighted average discount rate.

Under the Spot Rate Approach,

- Service cost is determined by discounting the incremental future cash flows in each year, associated with the benefits projected to be earned during the ensuing period, using the individual spot rates along the yield curve.
- Interest cost is determined by multiplying the individual spot rates from the yield curve by each year's present value of future projected benefit payments. The sum of those products is the interest cost for the period.

11. **Continued**

- The disaggregated rate for the Service Cost will be typically higher than the single weighted average discount rate used under the Traditional Approach because the incremental benefit obligation being measured will generally relate to the benefit payments expected to be paid in later periods when the rates on the yield curve are higher.

(b) Currently, the yield curve is upward sloping. However, it is expected that in the long term, the yield curve will be downward sloping.

Explain the short term and long term impacts of moving from the Traditional Approach to the Spot Rate Approach on the:

(i) Net Periodic Pension Cost

(ii) Accumulated Other Comprehensive Income

(iii) Projected Benefit Obligation

Commentary on Question:
Most candidates understood if Service Cost and Interest Cost are lower / higher under each yield curve environment but did not describe why. Few discussed the additional potential impact on G/L amortization. Some candidates struggled with the correlation between reduced Service Cost and Interest Cost and the AOCI.

(i) Net Periodic Pension Cost
<u>Service Cost and Interest Cost:</u>

- In the short-term, when the yield curve is upward sloping, the Service Cost and Interest Cost under the Spot Rate Approach will be lower than under the Traditional Approach.
- This is because the disaggregated rate for the Service Cost will be typically higher than the single weighted average discount rate used under the Traditional Approach because the incremental benefit obligation being measured will generally relate to the benefit payments expected to be paid in later periods when the rates on an upward sloping yield curve are higher.
- However, in the long run, when the yield curve is downward sloping, the resulting Service Cost and Interest, and therefore likely the Net Periodic Pension Cost, would be higher under the Spot Rate Approach than under the Traditional Approach.

11. **Continued**

Amortization of AOCI:

- In the long run, the growth in AOCI may lead to larger amortization effects in the Net Periodic Pension Cost in the future for amounts that are outside the corridor and may eventually offset some or all of the effects of the increased Service Cost and Interest Cost under the downward sloping yield curve (the opposite occurs in the short-term)
- Therefore, the increase under the downward sloping yield curve environment in the Net Period Benefit Cost due to the Spot Rate Approach may not be as pronounced.

Settlement Accounting:

- In the short run, because the Spot Rate Approach will result in lower Service Cost and Interest Cost as the yield curve is upward sloping, the settlement threshold may be triggered either more often or earlier in the year than under the Traditional Approach (the opposite occurs in the long-term)
- This may partially offset the overall reduction otherwise expected in the Net Periodic Benefit Cost due to the adoption of the Spot Rate Approach in the short-term.

Timing of recognition of gains and losses:

- If Company XYZ applies immediate recognition of any gains and losses, the adoption of the Spot Rate Approach will not have any impact on the Net Periodic Benefit Cost due to the offsetting changes in the actuarial gains/losses and service and interest cost.

(ii) AOCI

- The decrease in the Service Cost and Interest Cost will have an offsetting effect to the actuarial gains and losses and cause an increase in the AOCI in the short-term.
- In the long-term when the yield curve is downward sloping, there will be a reduction in the AOCI.

(iii) PBO

- There is no short-term or long-term impact on the PBO since the calculation of the benefit obligation at the beginning and end of the year are the same under both approaches.

11. Continued

(c) Compare and contrast the impact of adopting the Spot Rate Approach under IAS 19, Rev. 2011 versus ASC 715.

Commentary on Question:
To receive maximum points, candidates had to identify one similarity between ASC 715 and IAS 19 and discuss amortization of gains/losses, net interest cost, and settlement accounting.

PBO

- Under both IAS 19, Rev. 2011 and ASC 715, the calculation of the Pension Benefit Obligation is not affected by moving from the Traditional Approach to the Spot Rate Approach.

Service Cost & Interest Cost

- Under both IAS 19, Rev. 2011 and ASC 715, the Service Cost and Interest Cost would generally be lower under the Spot Rate Approach than under the Traditional Approach.

Net Interest Cost

- One major difference is that IAS 19 recognizes net interest cost on the net unfunded obligation whereas U.S. GAAP requires explicit assumptions for gross benefit obligation and the long-term expected return on plan assets.
- As a result, the Spot Rate Approach also affects the interest on the assets under IAS 19, unlike under ASC 715 and therefore, the impact of the Spot Rate Approach is muted for funded plans under IAS 19.

Amortization of Gains and Losses

- Another major difference is that under IAS 19, Rev. 2011, there is no amortization of remeasurement gains and losses as a component of net periodic benefit cost, and actuarial gains and losses are immediately reflected in the AOCI.
- As a result, the Spot Rate Approach actually lowers the Defined Benefit Cost under IAS 19, whereas under ASC 715, the Spot Rate Approach only impacts the timing of reporting in the Net Periodic Benefit Cost.

Settlement Accounting

- Another major difference is that unlike ASC 715, under IAS 19, if the settlements are due to lump sum elections by employees as part of the normal operating procedures of the plan, settlement accounting does not apply therefore adoption of the Spot Rate Approach under IAS19 does not trigger settlement accounting.

11. Continued

- On the other hand, under ASC 715, adoption of the Spot Rate Approach may trigger settlement accounting more often or earlier in the year than under the Traditional Approach.

12. Learning Objectives:

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

Sources:

DA-104-13: Deferred Retirement Option Plans ("DROP" Plans)

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

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) Describe the plan design characteristics of a deferred retirement option plan (DROP plan).

Commentary on Question:

Most candidates demonstrated their understanding of a DROP plan by describing the characteristics of a DROP plan.

12. Continued

- An arrangement where an employee who would otherwise be eligible to retire and receive benefits under an employer's defined benefit retirement plan instead continues working.
- Compensation and service are frozen at the date the member enters the DROP plan
- The employee has a sum of money credited during each year of continued employment to a separate account under pension plan
- The account earns interest until the member elects to retire
- When employ retires, the balance of the account is paid to the employee in addition to the accrual from the defined benefit plan based on the earlier service and earnings.

(b) Describe the advantages of a DROP plan from an employer and employee perspective.

Commentary on Question:
Candidates demonstrated a good understanding of the advantages and disadvantages of a DROP plan from both employer and employee perspectives.

Employer Perspective
<u>Advantages:</u>

- Ability to retain valued employees who are eligible to retire
- The employer may have immediate contribution savings during the drop period if the plan is designed to cease employer contributions once the DROP option is elected
- If the plan credits interest on actual earnings, then the investment risk is passed on to the employees instead of retained by the employer

Employee Perspective
<u>Advantages</u>

- Allows employees who may have hit a service cap to continue to accrued benefits
- The accrual from the DROP plan may be more favourable than additional accrual under the defined benefit arrangement (i.e., the employee is able to take advantage of early retirement subsidies)
- The DROP benefit may be payable as a lump sum, while the defined benefit is available only as a lifetime annuity

12. Continued

(c) Recommend whether Employee A should participate in the DROP plan or continue to accrue defined benefits assuming the employee retires at age 65.

Show all work.

Commentary on Question:
The candidates were expected to calculate the value of the benefits under both scenarios and make a recommendation.

The calculations below support the DROP plan as the preferred plan. Candidates also received credit if they projected the 2019 salary and made the opposite recommendation.

Pension at current age
= 2% * FAE * Service * ERF
= 2% * $70,000 * 25 * (1)
= $35,000

DROP account balance at retirement
= $35,000 * (1.065) ^ 2.5 + $35,000 * (1.065)^1.5 + $35,000*(1.065)^0.5
= $115,554.70

FAE at age 65
= ($71,000 + $72,500 + $75,000 + $75,000 * (1.03) * $75,000 * (1.03) ^ 2) / 5
= $75,063.50

Pension at age 65
= 2% * FAE * Service * ERF
= 2% * $75,063.50 * 28 * (1)
= $42,035.56

Value of DB pension option at retirement
= $42,035.56 * 15.0
= $630,533.40

Value of DROP plan option at retirement
= $35,000 * 15.0 +$115,554.70
= $640,554.70

Recommendation
Employee A should choose the DROP plan as it provides the greater value.