BROCK UNIVERSITY PENSION PLAN
INTRODUCTION TO FUNDING VALUATIONS
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Agenda

• Introduction to Funding Valuations
  – Overview
  – Types of valuations
  – What goes into a valuation?

• Structure of the Brock University Pension Plan
OVERVIEW
Background

- Funding valuations are required by the Income Tax Act ("ITA") at least every third year.

- The Ontario Pension Benefits Act ("PBA") requires that annual valuations be prepared if the transfer ratio (ratio of solvency assets to solvency liabilities) is less than 85%.

- A funding valuation effective July 1, 2014 must be filed with the Financial Services Commission of Ontario (FSCO) and the Canada Revenue Agency (CRA) by the end of March, 2015.

- The purpose of a funding valuation is to establish the minimum required (PBA) and maximum permissible (ITA) employer contributions until the effective date of the next valuation.
There are a variety of funding techniques…

- Most involve
  - setting a “funding target”
  - The funding target under the PBA is the greater of
    - the “going concern liability”, and
    - the “solvency liability”
  - using contributions to steer the pension fund toward the funding target

- Plan is considered to be in a deficit (surplus) if the value of plan assets is less (more) than the funding target.
  - if deficit ➔ need to increase contributions
  - if surplus ➔ can decrease contributions
Once the target has been set, the PBA and ITA prescribe the minimum required and maximum permissible contributions...

- The minimum (PBA) = Current Service Cost\(^{(1)}\) + payments to amortize deficiencies\(^{(2)}\) – full surplus

- The maximum (ITA) = Current Service Cost\(^{(1)}\) + full deficiency – surplus in excess of 25% of liabilities

- Brock University will need to decide how much to contribute within this range
  - Past practice has been to contribute the minimum required

\(^{(1)}\) Current Service Cost = the present value of the benefits ultimately payable in respect of service during the following year

\(^{(2)}\) Going concern deficiencies must be amortized over no more than 15 years; solvency deficiencies over no more than 5 years
TYPES OF VALUATIONS
Types of Actuarial Valuations

**Going-Concern Valuation**
- Assumes plan will continue indefinitely
- Assumptions set by actuary (with University input)

**Solvency / Wind-up Valuation**
- Assumes plan terminated on valuation date
- Prescribed assumptions – market basis
- Determines if funding needs to be accelerated
- Regulations allow certain adjustments to solvency valuations (adjudst timing of contributions)

**Accounting Valuation**
- For University financial statements
- Allocate pension costs in accordance with applicable accounting standard
- Based on extrapolation of going-concern valuation results

Max and Min Cash Funding Contributions

Brock University Funding Strategy

Pension Expense and Financial Disclosures

Actual Contributions
Types of Valuations
Going Concern Valuation

• Highlights:
  – plan assumed to be maintained indefinitely
  – employees assumed to continue working until termination, death or retirement
  – service and earnings grow over time
  – Plan actuary has flexibility in the choice of assumptions and methods but subject to the actuarial standards of practice

• Objectives:
  – determine financial position on a going concern basis
  – determine funding contribution requirements
  – current service cost (i.e. what will be accrued next year)
  – past service cost (i.e. deficits amortized over 15 years)
Types of Valuations
Hypothetical Wind-Up Valuation

• Highlights:
  – Plan assumed to be fully terminated and settled
  – Assets and liabilities measured at market value
  – Almost no flexibility in the choice of assumptions and methods
  – On plan wind-up
    - Members have a choice between lump sum settlement and annuity purchase
    - Service accruals cease
    - Future salary growth may cease (depending on plan provisions)

• Objectives:
  – To inform the plan sponsor, members, and the regulator of what the financial position of the plan would be on a full wind-up
Types of Valuations
Solvency Valuation

• Highlights:
  – Similar to wind-up valuation **BUT**
  – Legislation provides certain flexibility
    - Some benefits can be excluded
    - Some smoothing possible to reduce volatility

• Objectives:
  – To ensure members’ benefits are secure under a plan wind-up (subject to ability to exclude certain benefits in calculating liabilities)
  – To determine solvency contribution requirements
  – Any deficits have to be amortized over a 5-year period
WHAT GOES INTO A FUNDING VALUATION?
What Goes Into a Funding Valuation?
Data Inputs

• Membership data
  – Includes earnings, service and contribution balances for each individual
  – Includes data for retirees and terminated vested members with deferred pensions
  – Data checked for accuracy and consistency with prior years

• Asset data
  – Provided by the plan trustee (i.e. RBC Investor Services)

• Plan provisions
What Goes Into a Funding Valuation?

Assumptions

• Economic assumptions
  – Discount rate for valuing plan liabilities
  – Growth rate in account balances
  – Increase in future earnings
  – Future levels of inflation

• Demographic assumptions
  – Retirement age
  – Termination rates
  – Mortality

• Difference between assumptions and actual experience results in gains and losses
What Goes Into a Funding Valuation?

Methodology

• Assets
  – Valuation based on the market value of plan assets
    (i.e. no smoothing of asset return experience)

• Liabilities and Current Service Cost
  – Pension at retirement/termination is estimated based on either projected
    (for going concern) or frozen (for solvency) earnings, service and
    account balances
  – This estimated pension is split between service earned to date and
    future service
  – Value of pension benefits for service to date is the funding target
  – Value of one year of pension accrual is the current service cost
STRUCTURE OF THE BROCK UNIVERSITY PENSION PLAN
## The Brock University Pension Plan
### Retirement Benefits

<table>
<thead>
<tr>
<th>Money Purchase Benefit</th>
<th>Minimum Guarantee Supplement</th>
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<tbody>
<tr>
<td>Benefit is based on what can be provided by the member’s accumulated account balance</td>
<td>Benefit based on a formula related to service and earnings less the Money Purchase Benefit</td>
</tr>
</tbody>
</table>

- In practice, this means that members receive a pension benefit that is equal to the greater of the:
  - The Money Purchase (defined contribution) benefit; and
  - The Minimum Guarantee (defined benefit) benefit
The Brock University Pension Plan
Retirement Benefits – Money Purchase Pension

- Each year, the Money Purchase Component (MPC) Account:
  - Increases with member and University contributions; and
  - Is credited with fund rate of return, which can be positive or negative

- At pension commencement, the Money Purchase Component (MPC) Account is transferred to the Variable Annuity Fund and used to provide a Money Purchase Pension (MPP)
  - Pensions from the Variable Annuity Fund are adjusted annually for both investment and mortality experience
The Brock University Pension Plan
Retirement Benefits – Minimum Guarantee

- The “Minimum Guarantee Benefit” is a defined benefit pension which is based on your:
  - Best Average Earnings;
  - Pensionable Service; and,
  - Estimated annual Canada Pension Plan benefit

- Minimum Guarantee Pension (MGP)*, payable in a Life 5 form starting at normal retirement date, is calculated as:

  1.7% of Best Five Year’s Average Earnings (BAE) x
  Pensionable Service

  \[ \text{MINUS} \]

  \[
  \frac{1}{35} \times \text{Estimated Annual Canada Pension Plan Benefit} \times \text{Pensionable Service capped at 35 years}
  \]

- MGP is actuarially adjusted if pension commencement is prior to age 65 or different form of pension is elected

*subject to Income Tax Act maximum pension limits
The Brock University Pension Plan
Retirement Benefits – Indexing

• After pension commencement, the Money Purchase Pension and Minimum Guarantee Pension are adjusted every July 1.

• The Money Purchase Pension is adjusted (up or down) if the experience is different than that assumed in calculating the starting pension:
  – fund rate of return different from 6%
  – mortality of the pensioner group different than assumed
    - Differences between actual and expected mortality experience
    - Changes in expected future mortality experience (ie. changes in underlying mortality table)

• The Minimum Guarantee Pension is increased by the lesser of 2% and the change in the Consumer Price Index (CPI)
  – The comparison between 2% and CPI is cumulative

• After both pensions have been adjusted for indexing, the two pensions are compared to see which is larger; the larger amount becomes the pension payable starting July 1.
The Brock University Pension Plan
Retirement Benefits – Indexing Illustration

Retirement Benefits - Indexing Illustration

Monthly Pension

$0  $200  $400  $600  $800  $1,000  $1,200

Years

2007  2008  2009  2010  2011  2012  2013  2014

Minimum guarantee supplement
Money purchase pension
Minimum guarantee pension
Funding Valuation for a Hybrid Pension Plan
Assets and Liabilities are Allocated to Several Notional Accounts

### Assets
- Money Purchase, Short Term Account, AVCs, and Special Transferred Contribution Funds
- Variable Annuity Fund
- Minimum Guarantee Fund \((A)\)

\[ \text{Total Assets} = \text{Total Liabilities} \]

### Liabilities
- Money Purchase, Short Term Account, AVCs, and Special Transferred Contribution Funds
- Variable Annuity Fund
- Minimum Guarantee Liabilities \((B)\) for:
  - Active Members
  - Retired Members

\[ \text{Total Liabilities} = (A) - (B) \]

### Surplus (Deficit)
- n/a
- n/a
- \((A) - (B)\)

Surplus or deficit is the difference between the assets in the Minimum Guarantee Fund and the Liabilities for the Minimum Guarantee Benefits.
Funding Valuation for a Hybrid Pension Plan
The “Horserace”

• The minimum guarantee liability arises if the projected minimum guarantee pension is greater than the projected money purchase pension

• To calculate the minimum guarantee liabilities, we need to determine how:
  – The projected pension on the money purchase basis compares to
  – The projected pension on the defined benefit minimum guarantee formula

• In the Brock University Pension Plan, this “horserace” continues both before and after pension commencement
Funding Valuation for a Hybrid Pension Plan
Impact of Leverage

Minimum Guarantee Pension

Money Purchase Pension

Minimum Guarantee Liability

(-10%) Money Purchase Pension

(+100%) Minimum Guarantee Liability