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BROCK UNIVERSITY PENSION PLAN
INTRODUCTION TO FUNDING VALUATIONS
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Items Covered:

- Introduction to Funding Valuations
  - Overview
  - Types of valuations
  - What goes into a valuation?
- Structure of the Brock University Pension Plan

INTRODUCTION TO FUNDING VALUATIONS
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% for plans where the solvency liabilities exceed the solvency assets by more than $5,000,000 and less than 80% for all other plans
- A funding valuation effective July 1, 2011 must be filed with the Financial Services Commission of Ontario (FSCO) and the Canada Revenue Agency (CRA) by the end of March, 2012
- 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”
  - 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

Considerations in setting a funding target…

- The funding target under the PBA is the greater of
  - the “going concern liability”, and
  - the “solvency liability”

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

INTRODUCTION TO FUNDING VALUATIONS

TYPES OF VALUATIONS

Types of 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 (adjusts timing of contributions)

Accounting Valuation

- For University financial statements
- Allocate pension costs in accordance with applicable accounting standard
- Management's “best estimate” assumptions (except discount rate) with actuary input

Max and Min Cash Funding Contributions

Brock University Funding Strategy

Actual Contributions

Pension Expense and Financial Disclosures

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

INTRODUCTION TO FUNDING VALUATIONS

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 Dexia)
- 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

Money Purchase Benefit

Benefit is based on what can be provided by the member's accumulated account balance

+

Minimum Guarantee Supplement

Benefit based on a formula related to service and earnings **less** the Money Purchase Benefit

- 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

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)

The Brock University Pension Plan
Retirement Benefits – Minimum Guarantee

- The "Minimum Guarantee Benefit" is a defined benefit pension which is based on:
  - Best Average Earnings;
  - Pensionable Service; and,
  - Estimated annual Canada Pension Plan benefit
- Minimum Guarantee Pension (MGP)*, payable in a life pension guaranteed for 5 years form starting at normal retirement date, is calculated as:

1.7% of Best Five Year's Average Earnings (BAE) x
Pensionable Service
MINUS
1 / 35 of Estimated Canada Pension Plan Benefit x
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

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
- 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

Variable Annuity Fund

- Variable Annuity Fund is:
  - Invested in accordance with the Statement of Investment Policies and Procedures in the same manner as the total fund (i.e. 60% equities, 40% fixed income)
  - Self supporting on investment **and** mortality experience

- The best way to think about the Variable Annuity Fund is as a “pot of money” which is paying the Money Purchase Pensions to retired members
  - If experience is good, pension amounts can be increased
  - If experience is poor, pension amounts have to be reduced to match how much money is left in the fund

How does the Variable Annuity Fund work?

July 1, 2010 → **July 1, 2011**

Actual rate of return

Actual mortality

Actual benefit payments

Basic Question:

What pensions can be paid from Variable Annuity Fund [1]

Basic Question:

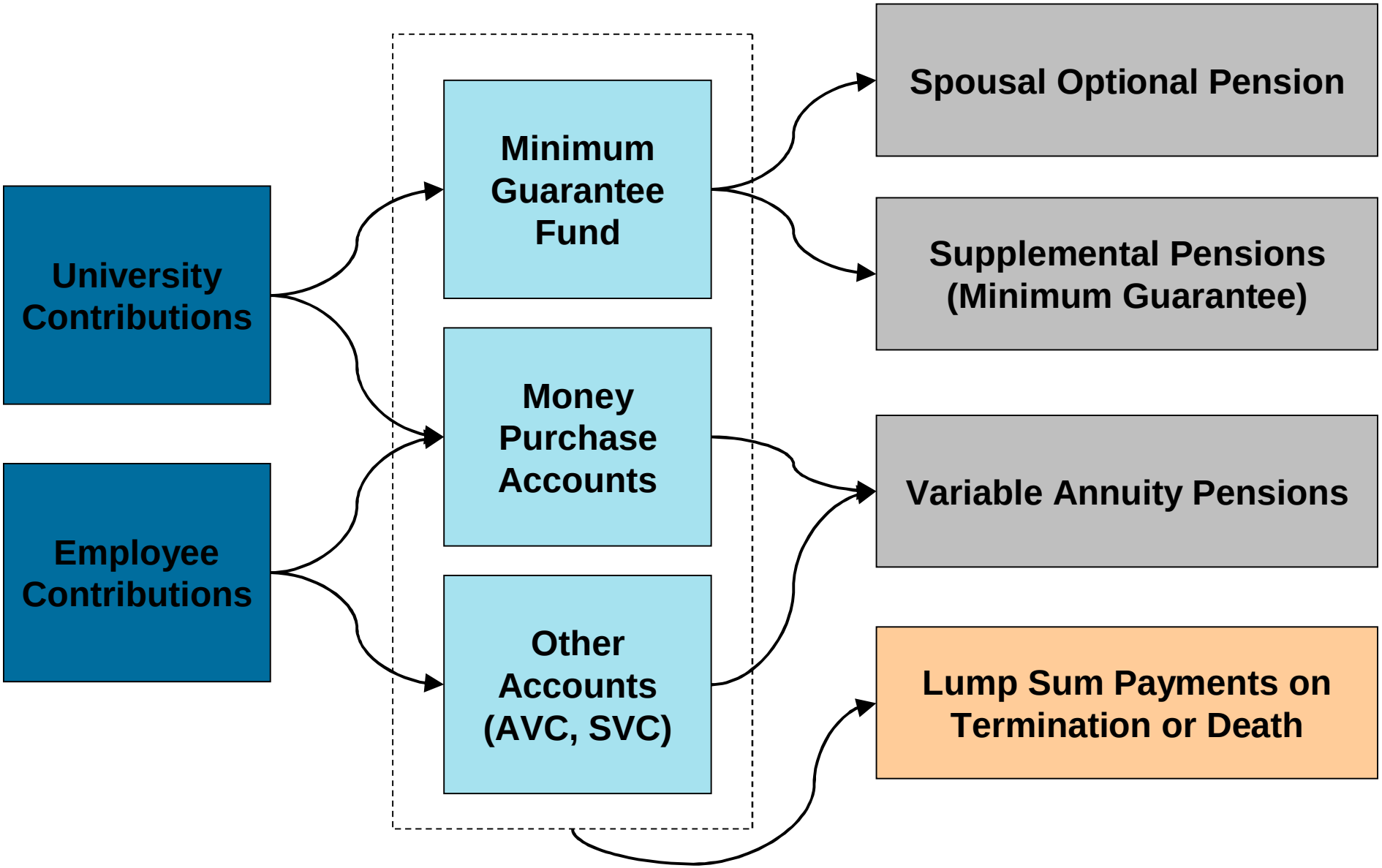
What pensions can be paid from Variable Annuity Fund [1]

[1] The assumptions currently used for this purpose are an interest rate of 6.0% per annum and the modified UP94 mortality table with projected mortality improvements (70% male, 30% female).

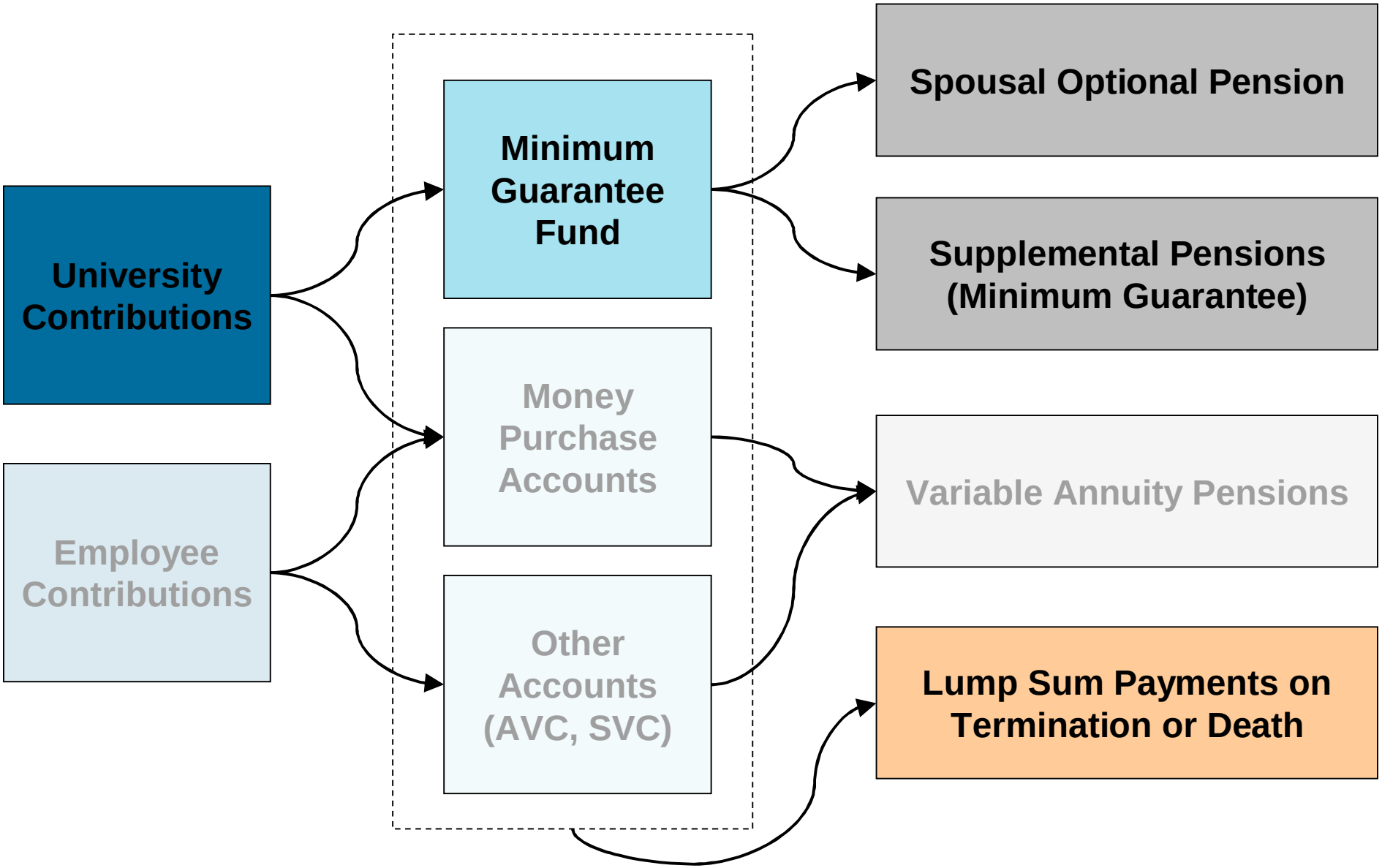
How does the Variable Annuity Fund work?
What does all this mean?

- Pensions from the Variable Annuity Fund are adjusted annually for both investment and mortality experience
- Investment experience:
  - Measured against a base rate of 6%
  - In the absence of any mortality adjustments:
    - Actual return > 6% ➔ positive pensioner adjustment
    - Actual return < 6% ➔ negative pensioner adjustment
- Mortality experience
  - Measured against a mortality table that is periodically updated to reflect anticipated pensioner mortality
  - Pension amounts are adjusted for:
    - Differences between actual and expected mortality experience
    - Changes in expected future mortality experience

Structure of the Brock University Pension Plan



Which components are the most affected by the valuation?



Funding Valuation for a Hybrid Pension Plan

Assets and Liabilities are allocated to several notional accounts

Assets		Liabilities		Surplus (Deficit)
Money Purchase, Short Term Account, AVCs, and Special Transferred Contribution Funds		Money Purchase, Short Term Account, AVCs, and Special Transferred Contribution Funds		n/a
+		+		+
Variable Annuity Fund		Variable Annuity Fund		n/a
+		+		+
Minimum Guarantee Fund **(A)**	–	Minimum Guarantee Liabilities **(B)** for:	=	(A) – (B)
		Active Members		
		Retired Members		
=		=		=
Total Assets		**Total Liabilities**		(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

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