UNIVERSITY OF TORONTO

FINANCIAL SERVICES

TO: Pension Committee

SPONSOR: Sheila Brown
CONTACT INFO: 416-978-2065, sheila.brown@utoronto.ca
DATE: May 29, 2013 for June 5, 2013

AGENDA ITEM:

ITEM IDENTIFICATION:

Responding to Questions from Members of the Pension Committee:
(Understanding liabilities and cash flow, pre-funding, and increases in current service costs as a % of pensionable salary over time)

JURISDICTIONAL INFORMATION:

The Pension Committee has responsibility for monitoring and oversight of the administration of the registered pension plans.

PREVIOUS ACTION TAKEN:

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HIGHLIGHTS:

The attached document, prepared in the form of a presentation to the Pension Committee, addresses questions asked by Pension Committee members with respect to understanding the liabilities and cash flow, pre-funding of the pension plans, and increases in current service costs as a % of pensionable salary over time. A presentation of these slides will be made at the meeting on June 5, 2013.

FINANCIAL AND/OR PLANNING IMPLICATIONS:

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RECOMMENDATION:

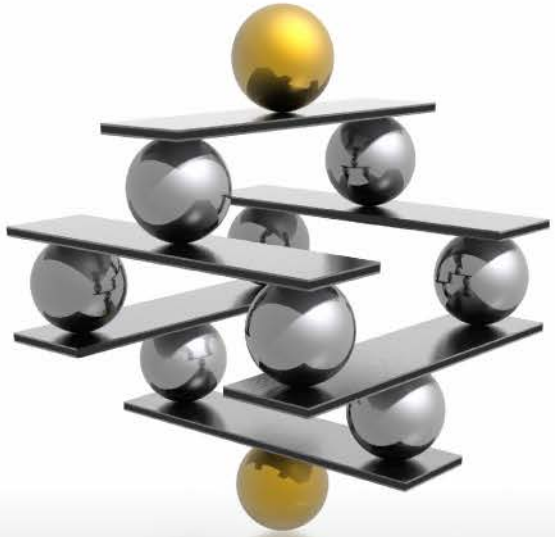
For information.

University of Toronto Pension Committee

Responding to Questions From Committee Members
(understanding liabilities and cash flow, prefunding, and increases in current service costs as a % of pensionable salary over time)

Prepared By: **Sheila Brown, CFO, University of Toronto**
Allan Shapira, FSA, FCIA, Aon Hewitt

Liabilities and Cash Flow



What are the Pension Liabilities?

- The stream of future payments to current and future pensioners for pension benefits earned to the measurement date (e.g., July 1, 2012)
- This stream of future payments is discounted to the measurement date via a net present value calculation using a discount (interest) rate
- The pension liabilities are measured in several ways:
  - On a going concern basis assuming that the pension plan will continue indefinitely into the future
  - On an assumption that the pension plan will be wound up:
    - Solvency (excluding cost-of-living adjustments)
    - Hypothetical wind-up (including cost-of-living adjustments)
- At July 1, 2012, the going concern pension liabilities total $3.884 billion for the RPP, RPP (OISE) and SRA combined

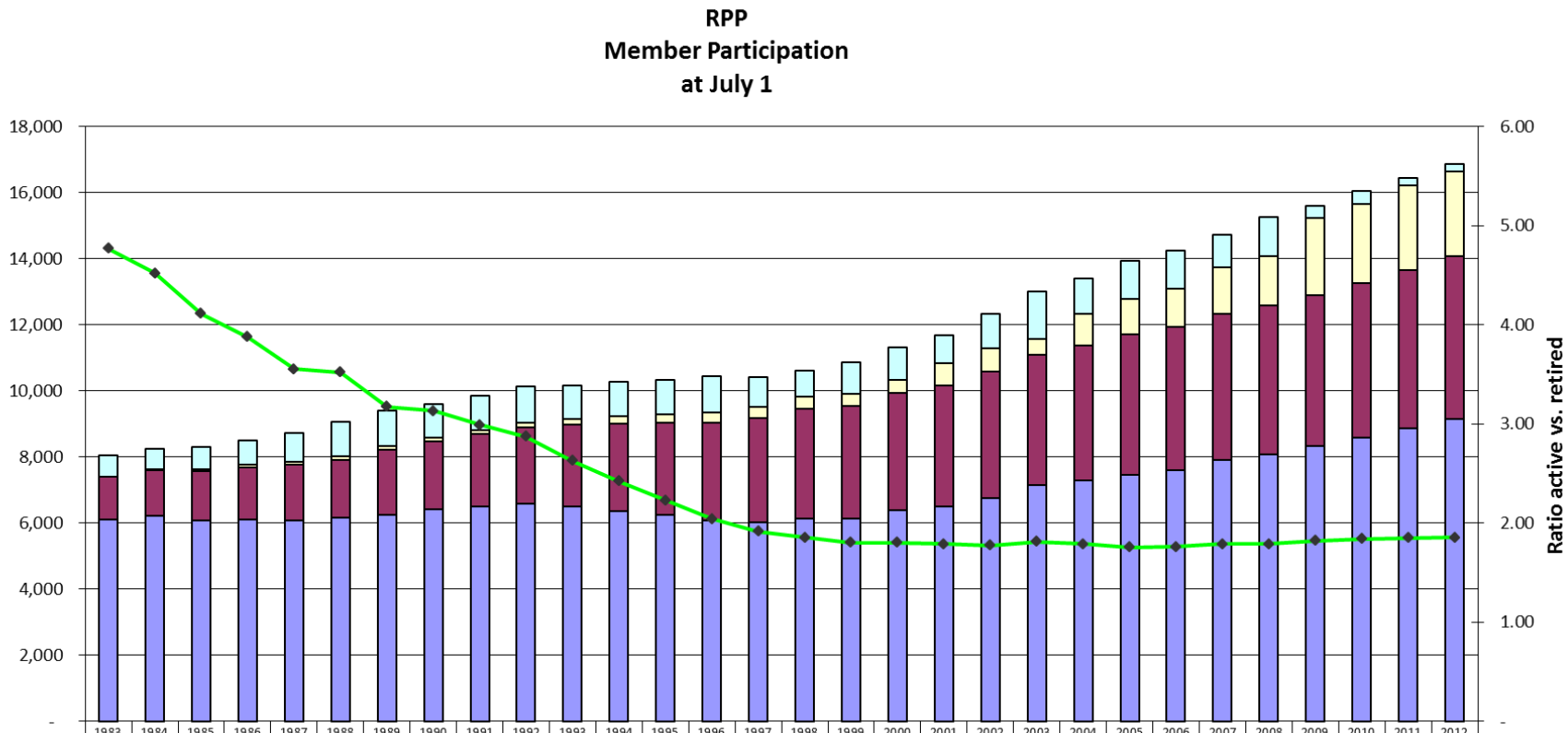
What Determines the Amounts Ultimately Payable to Pensioners?

- The benefit provisions of the plan including the benefit accrual formula, inflation indexing provisions for cost-of-living adjustments (COLA), retirement age provisions and survivor benefits
- The highest average salary of each participant at retirement
- The Canada Pension Plan (CPP) maximum salary near retirement
- The number of years at retirement that each participant has been a member of the pension plan (pensionable service)
- The degree to which payments determined as per the above parameters will increase with actual inflation after pension commences
- The number of payments that are ultimately made, that is, the length of time between the start of payments and death of each participant and if applicable, their survivor (longevity)

Key Benefit Provisions

- Benefits accrual and retirement dates:
  - 1.5% or 1.6% per year of pension service of highest 36-month average salary up to average CPP maximum salary
  - 2.0% per year of service of highest 36-month average salary in excess of average CPP maximum salary up to a University pensionable salary maximum of $150,000
  - No mandatory retirement
  - Normal retirement date is June 30th following 65th birthday
  - No actuarial reduction once members reach age 60 and meet certain service requirements, which vary by staff group
  - Benefits accrual continues after age 65. Pension benefits must commence no later than December 1 of the year in which the participant's 71st birthday occurs
- Cost-of-living adjustment (COLA) at the greater of:
  - 75% of the increase in the CPI for the previous calendar year to a maximum CPI increase of 8% plus 60% of the increase in CPI in excess of 8%, AND
  - The increase in the CPI for the previous calendar year minus 4%
  - First COLA is made at date of retirement

Plan Participants



	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Suspended, exempt, pending	630	625	683	751	877	1,044	1,074	1,002	1,055	1,095	1,027	1,048	1,039	1,095	914	803	957	987	868	1,033	1,447	1,076	1,164	1,178	999	1,168	374	382	225	207
Terminated, vested	15	30	45	63	81	97	103	114	124	153	179	217	250	319	346	352	362	396	677	724	489	961	1,072	1,154	1,413	1,493	2,326	2,402	2,546	2,564
Retired members	1,282	1,375	1,480	1,578	1,707	1,750	1,967	2,051	2,177	2,293	2,471	2,632	2,801	2,968	3,145	3,318	3,409	3,543	3,642	3,813	3,942	4,078	4,246	4,323	4,421	4,514	4,569	4,670	4,797	4,934
Active members	6,112	6,214	6,085	6,115	6,065	6,162	6,244	6,419	6,507	6,587	6,492	6,368	6,242	6,063	6,014	6,141	6,137	6,381	6,504	6,759	7,141	7,288	7,452	7,599	7,894	8,078	8,326	8,587	8,869	9,149
Ratio active vs. retired	4.77	4.52	4.11	3.88	3.55	3.52	3.17	3.13	2.99	2.87	2.63	2.42	2.23	2.04	1.91	1.85	1.80	1.80	1.79	1.77	1.81	1.79	1.76	1.76	1.79	1.79	1.82	1.84	1.85	1.85

What are the Key Assumptions that Factor into the Estimate of the Cash Flow and Liability?

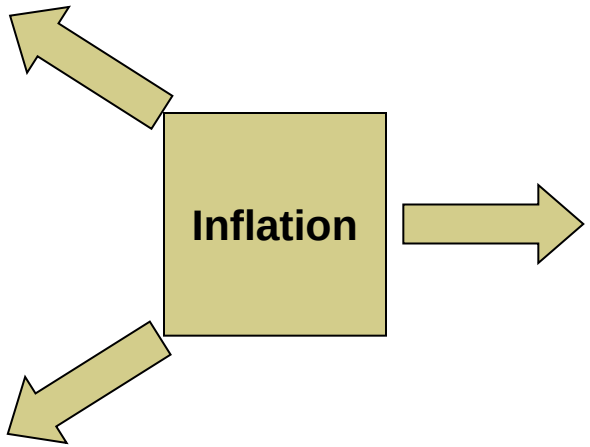
- Assumptions impacting cash flow:
  - CPI (which affects salary at retirement, cost-of-living adjustments—COLA—to pension payments; also impacts the discount rate used for the net present value)
  - Salaries:
    - Participant salary increases
    - CPP maximum salary increases
  - Retirement age estimates of when active members will retire
  - COLA estimates
  - Mortality estimates of how long each plan member will live and receive payments
- Assumption impacting liabilities at measurement date:
  - Discount rate used to discount future cash flows to the measurement date

Real Growth

Benefits

Pension Benefits Before Retirement
- Salary increases
- CPP maximum salary increases
- ITA maximum pension increases

Pension Benefits After Retirement
- Indexation



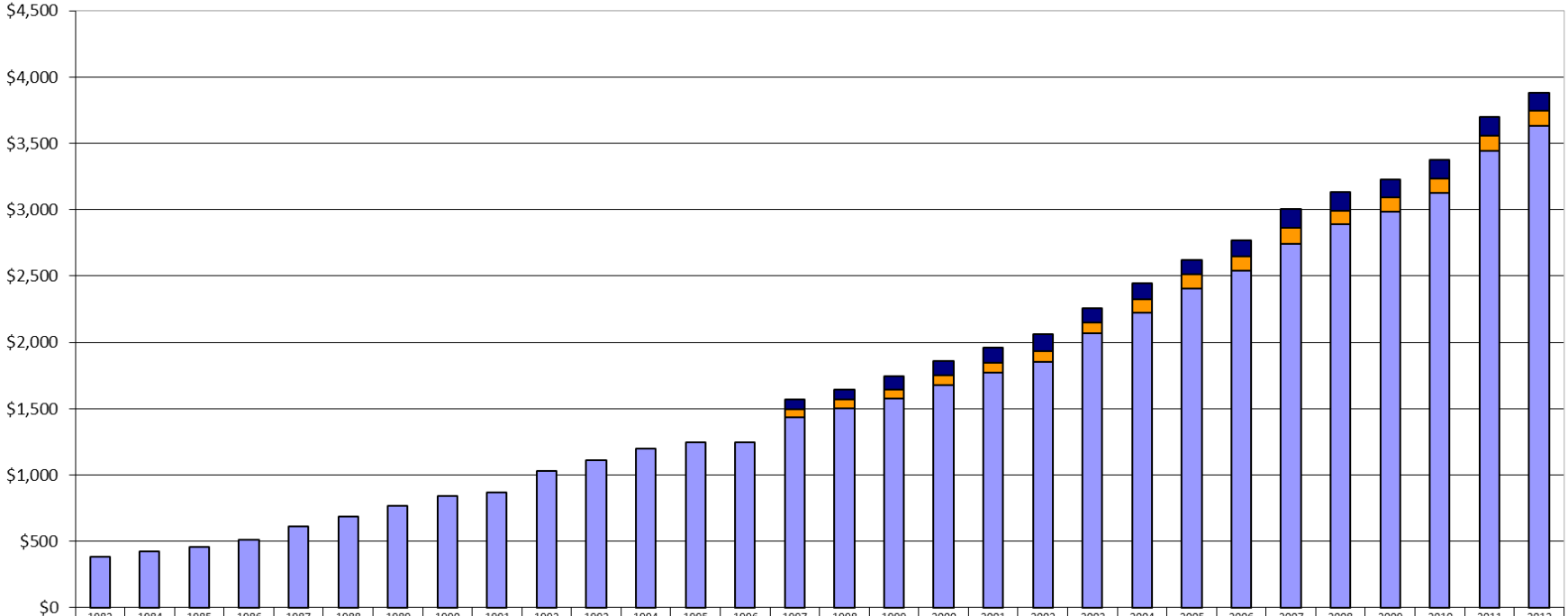
Assets

Investment Return on Various Assets Classes

Since inflation drives both the pension benefits paid out and the funding made from investment return, it is the excess of interest rates and investment return over inflation, or "real return" and the excess of salary and government benefit increases over inflation that are the key factors.

Going Concern Pension Liabilities

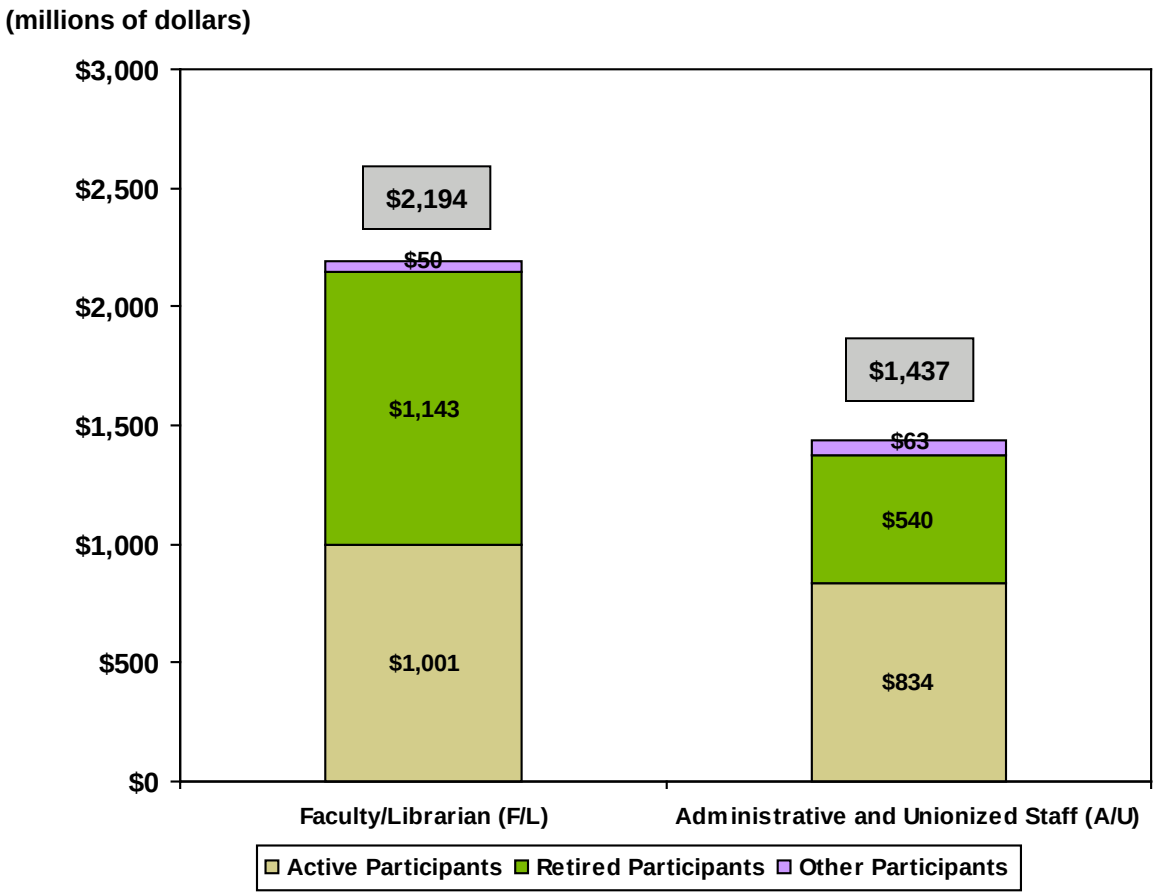
Going Concern Pension Liabilities
RPP, RPP(OISE) and SRA
at July 1
(millions of dollars)



	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
SRA liabilities	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72.5	74.2	102.4	107.9	116.8	131.8	108.6	122.7	112.9	122.1	145.4	139.8	136.1	138.3	140.4	135.2
RPP(OISE) liabilities	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60.8	64.1	65.9	69.5	73.8	77.9	83.4	97.6	103.7	108.6	115.3	104.2	106.6	109.0	116.1	117.8
RPP liabilities	384.0	420.6	456.7	512.7	613.5	689.0	765.5	845.0	869.7	1,031.5	1,110.3	1,201.9	1,243.6	1,249.1	1,436.7	1,503.3	1,575.1	1,680.2	1,770.5	1,852.9	2,066.7	2,225.0	2,407.0	2,540.6	2,745.8	2,889.6	2,983.8	3,126.0	3,443.5	3,631.0

Going Concern Pension Liabilities

- Following is a split of the going concern pension liabilities as of July 1, 2012 under the UofT Pension Plan (i.e., excludes OISE and SRA) between Faculty/Librarians and Administrative and Unionized Staff



Participant Category	Portion of Total F/L / A/U
Other Participants	47% / 53%
Retired Participants	68% / 32%
Active Participants	
Liabilities	55% / 45%
Current Service Cost	50% / 50%

Cash Flow Projection

- Takes existing active, retired and deferred vested participants as of July 1, 2012 and projects pension benefit payments (for both service up to and after July 1, 2012) and contributions over 30-year to 75-year period, depending on projection
- Projection of pension benefit payments is based on the assumptions for:
  - When benefits are payable: termination, disability, and preretirement mortality rates and retirement ages
  - Amount of pension benefits payable: increases in CPI, CPP maximum salary, ITA maximum pension and salaries
  - How long pension benefits are payable: postretirement mortality rates, percentage of pensioners with survivor
- Projection of contributions based on:
  - Number of existing active participants remaining in plan over various years of projection based on same assumptions as used above for projecting pension benefits
  - Calculation of Total Current Service Cost each year for those active members based on the July 1, 2012 actuarial assumptions
  - Special payments also reflected (based on amortizing July 1, 2012 going concern deficit calculated using market value of assets over a 15-year period)

Cash Flow Projection (continued)

Chart 1

- 30-year projection to show how pension benefit payments in respect of existing members continue to increase as current service cost contributions decrease

Chart 2

- 75-year projection that shows the projection of pension benefit payments and contributions and also shows how the assets and liabilities continue to build up over the first 30 or so years and then start to be drawn down over the next 45 years

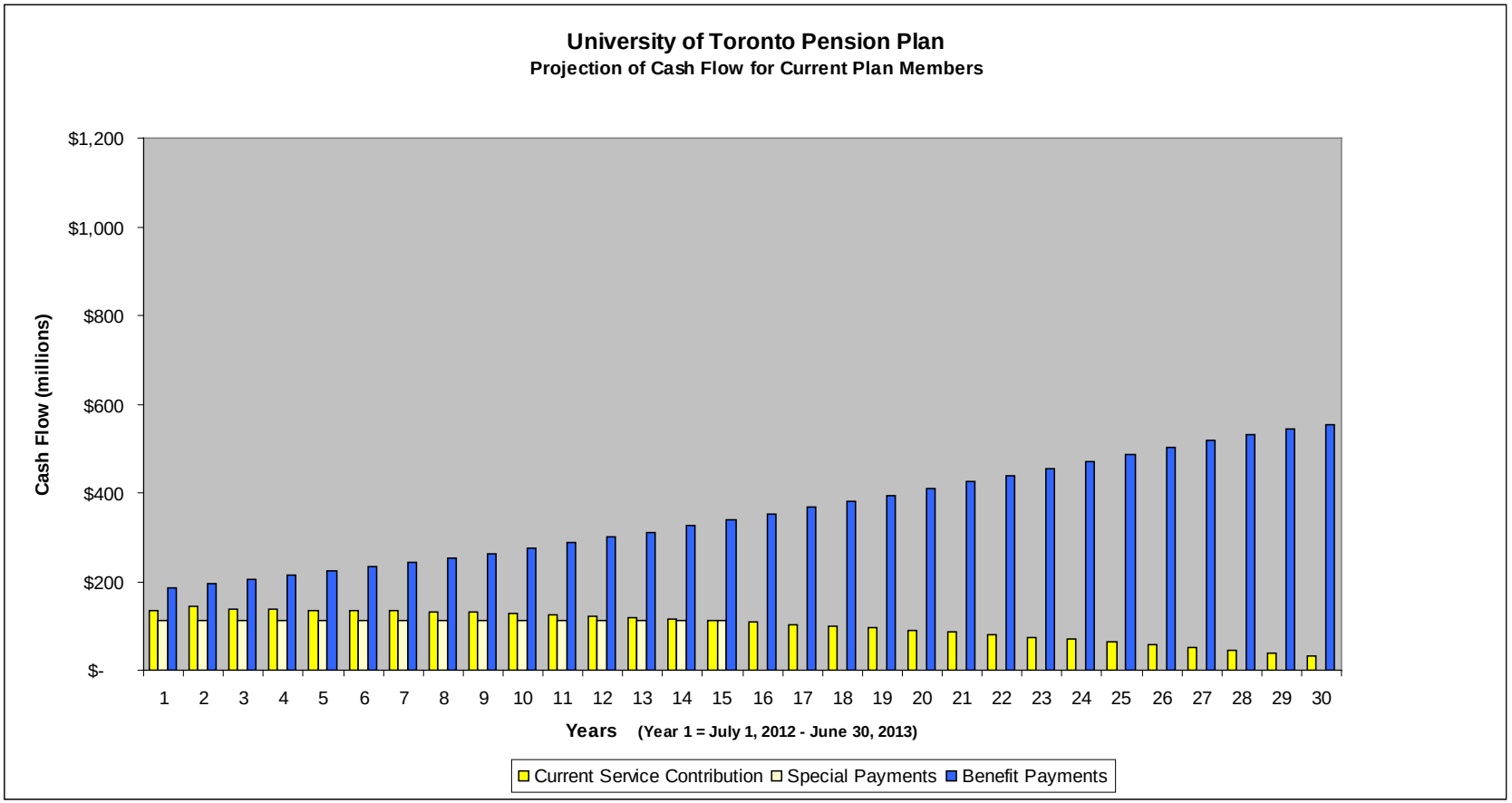
Chart 3

- Modification to Chart 1 to show the impact of maintaining active membership at the July 1, 2012 level

Cash Flow Projection (continued)

Chart 1

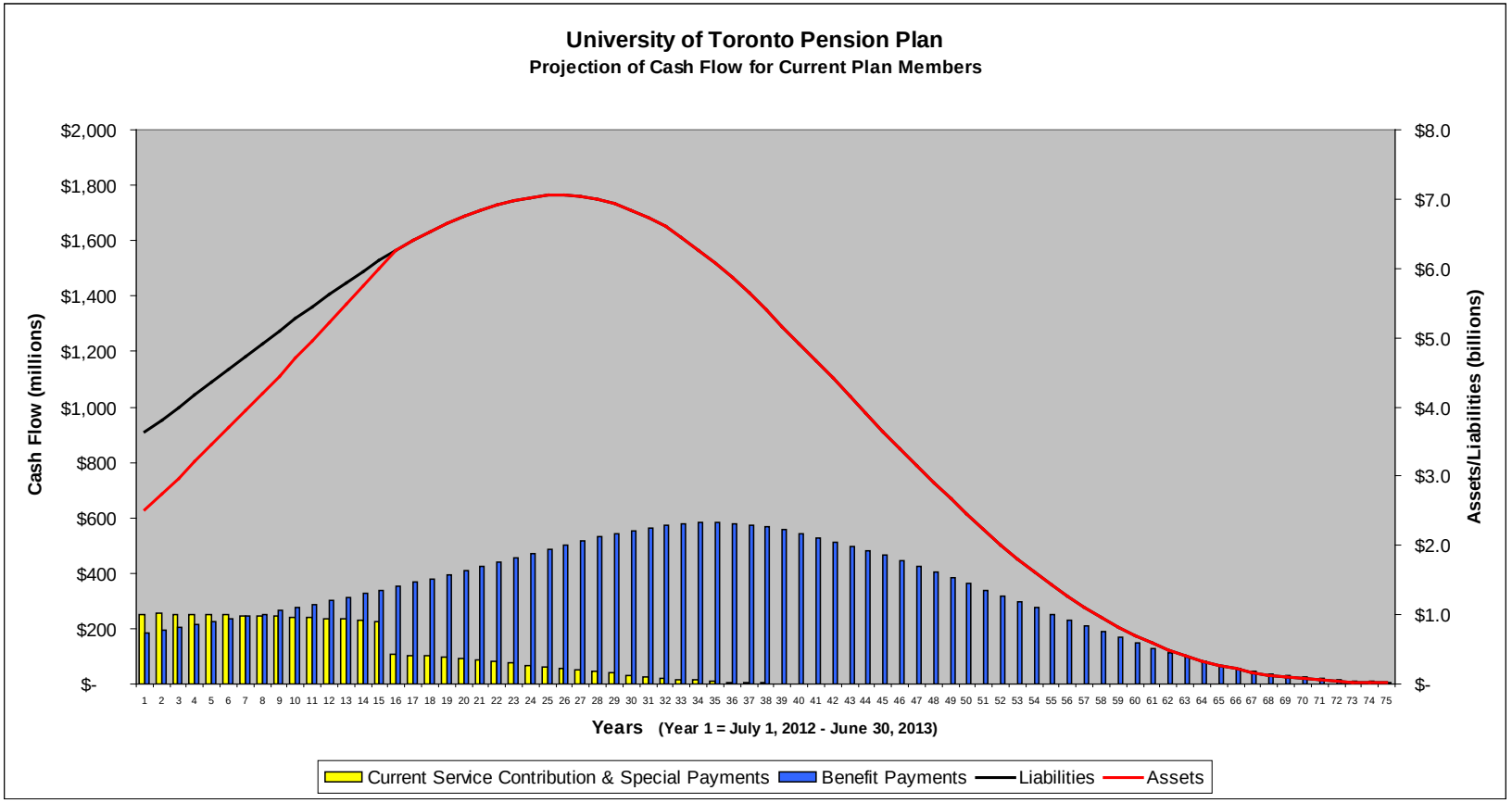
- 30-year projection to show how pension benefit payments in respect of existing members continue to increase as current service cost contributions decrease



Cash Flow Projection (continued)

Chart 2

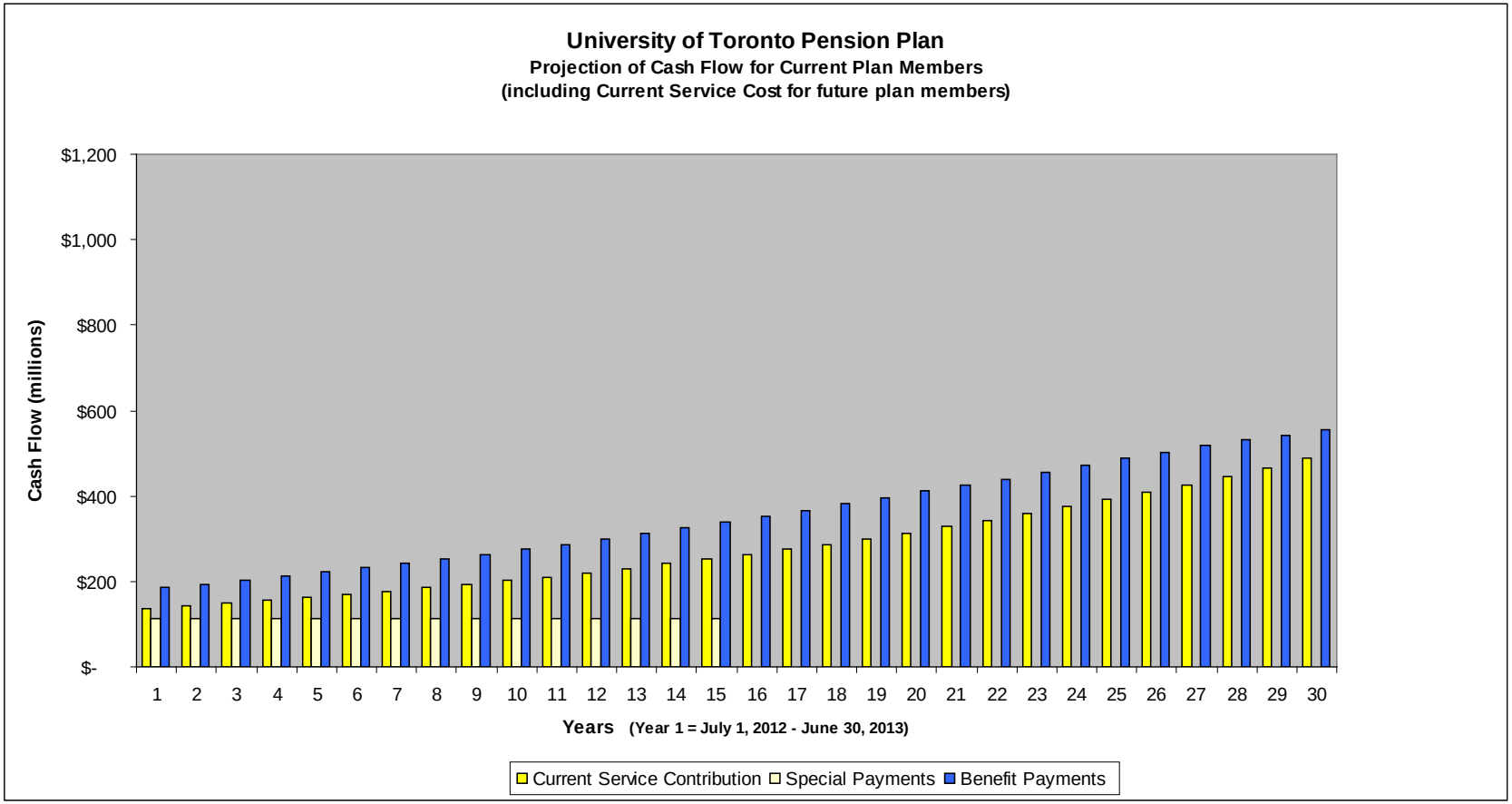
- 75-year projection that shows the projection of pension benefit payments and contributions and also shows how the assets and liabilities continue to build up over the first 30 or so years and then start to be drawn down over the next 45 years



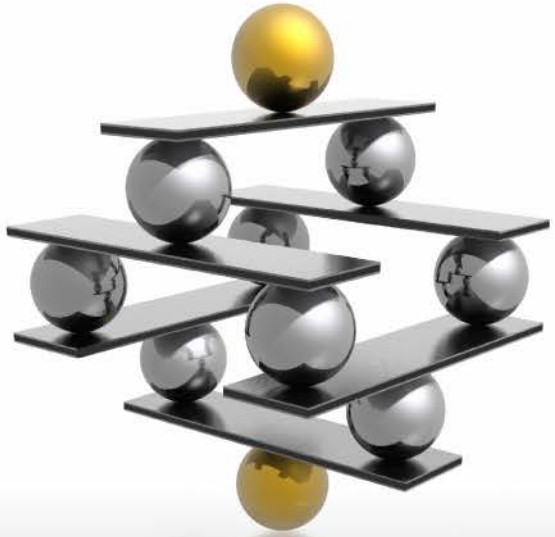
Cash Flow Projection (continued)

Chart 3

- Modification to Chart 1 to show the impact of maintaining active membership at the July 1, 2012 level



Funding the Pension Plan



Funding the Pension Plan

Funding Sources

Member Contributions

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University Contributions

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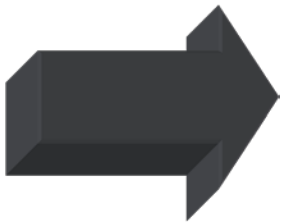
Investment Earnings



Cost of Pension Plan

Benefits paid to members, as determined by plan provisions

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Costs to administer pension plan

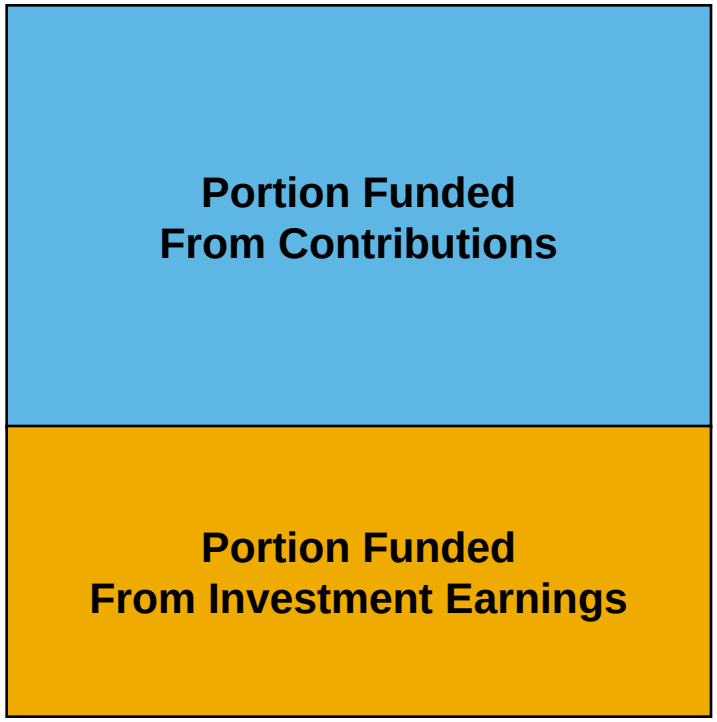
Prefunding Pension Obligations

- Purpose of prefunding is that by the time each plan member reaches retirement, there are sufficient assets accumulated in the pension fund over that member's working career (through contributions and investment earnings) to pay the pension benefit, determined under the plan provisions, over that member's retirement years
- Amount required at retirement is based on expected longevity of the pensioner, the expected indexation and the expected investment return on the funds being held—so even at retirement it is still an estimate
- If amount being held at retirement is in fact sufficient to provide the pension benefits over the member's retirement years, then there is no requirement for future contributions to pay that pension
- Assumptions and methods used in prefunding do not change the ultimate cost of the plan which is the sum of the benefits paid and the costs to administer the plan; however, they do impact:
  - The allocation of contributions to different periods of time, which in turn can impact the plan sponsor and/or the members
  - The portion of the total cost that comes from contributions versus investment earnings
  - Decisions made at various points in time on levels of contributions and levels of benefits

Balancing Contributions and Investment Earnings

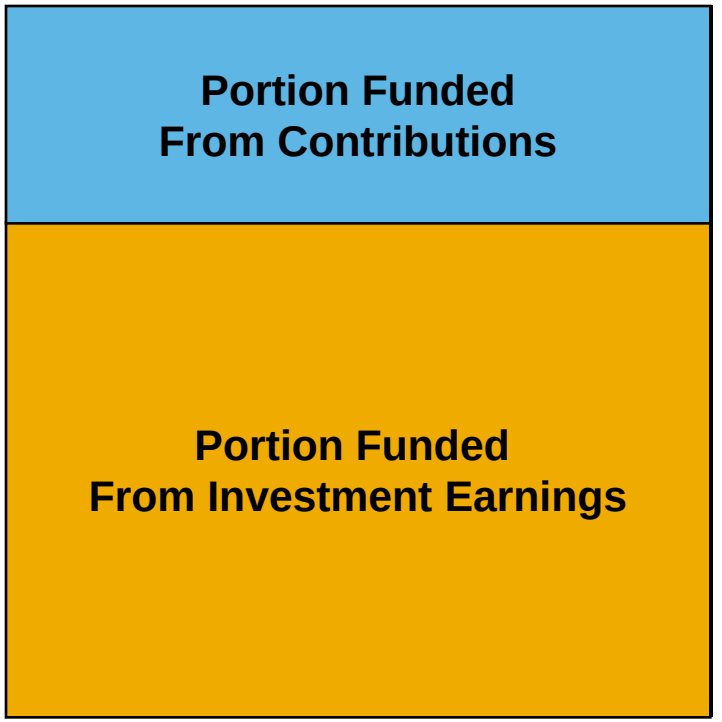
Take Less Investment Risk
Target Lower Expected Returns
Target Higher Expected Contributions

Cost of Pension Plan



Take More Investment Risk
Target Higher Expected Returns
Target Lower Expected Contributions

Cost of Pension Plan



Balancing Contributions and Investment Earnings Under UofT Pension Plan

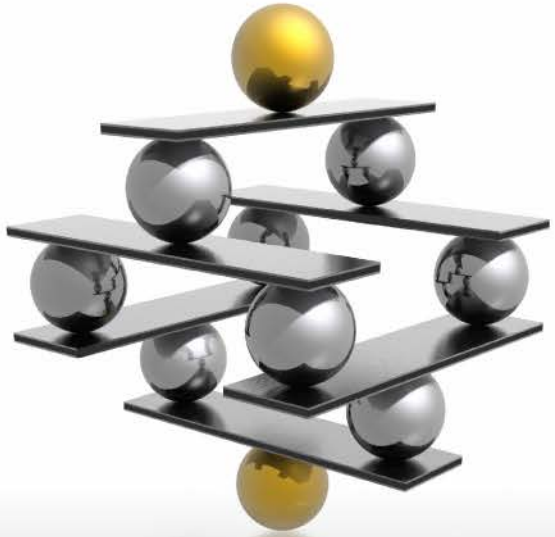
Take Less Investment Risk
Target Lower Expected Returns
Target Higher Expected Contributions

Take More Investment Risk
Target Higher Expected Returns
Target Lower Expected Contributions

				Current[1]	
Expected Real Investment Return	2.50% per year	3.00% per year	3.50% per year	3.75% per year	4.00% per year
Going Concern Funding Shortfall Based on Market Value of Assets	$1.81 billion	$1.53 billion	$1.25 billion	$1.12 billion	$975 million
Total Current Service Cost	$179.8 million— 24.6% of pensionable salary	$162.2 million— 22.3% of pensionable salary	$144.7 million— 19.8% of pensionable salary	$135.9 million— 18.6% of pensionable salary	$127.2 million— 17.4% of pensionable salary

[1] Based on July 1, 2012 actuarial valuation

Increases In Current Service Cost



Impact of Assumption and Benefit Changes on Current Service Cost

- Total Current Service Cost under actuarial valuation for UofT Pension Plan (which is estimate of the cost of the pension benefits earned in a given year) has increased from 13.4% of participant salary base as of July 1, 1987 (based on a real discount rate of 2.50% per year) to 18.8% of participant salary base as of July 1, 2012 (based on a real discount rate of 3.75% per year)
- If Total Current Service Cost was calculated as of July 1, 2012 based on a real discount rate of 2.50% per year, the result would be 24.6% of participant salary base

Impact of Assumption and Benefit Changes on Current Service Cost (continued)

Change in Assumptions

Assumption	As of July 1, 1987	As of July 1, 2012
Increase in CPI	5.50%	2.50%
Increase in CPP Maximum Salary	7.00% (CPI + 1.50%)	3.50% (CPI + 1.00%)
Increase in Salaries	7.00% (CPI + 1.50%)	4.50% (CPI + 2.00%)
Investment Return (Nominal Discount Rate)	8.00% (CPI + 2.50%)	6.25% (CPI + 3.75%)
Mortality Rates	1983 Group Annuity Table	1994 Uninsured Pensioner Mortality Table with Generational Projection Under Scale AA
Yield on Long-Term Government of Canada Bonds		
Nominal	10.3%	2.3%
Real	4.4%[1]	0.4%

Lowering spread between Increase in CPI and CPP Maximum Salary by 0.5% puts more of the benefit at the 2.0% accrual rate

Increasing spread between Increase in CPI and Salaries increases the projected benefits

Lowering nominal discount rate increases cost for non-indexed portion of benefit

[1] 1991 rate which is the first year real return bonds were issued

Impact of Assumption and Benefit Changes on Current Service Cost (continued)

Change in Benefits

Benefit Provision	As of July 1, 1987	As of July 1, 2012
Benefit Accrual Rate Below CPP Maximum Salary	1.0%	1.5% or 1.6% depending on faculty/staff groups
Subsidized Payment Form For Participants With Spouse	50% joint-and-survivor pension	60% joint-and-survivor pension
Indexation	60% of increase in CPI	75% of increase in CPI
Member Contribution Rates	2.5% up to CPP Maximum Salary plus 5.0% above	6.3%/6.8% up to CPP Maximum Salary plus 8.4% above

Impact of Assumption and Benefit Changes on Current Service Cost (continued)

Impact of Improving Longevity

	Life Expectancy at Age 65 (years)	
Mortality Table	**Male**	**Female**
1983 Group Annuity Table	16.7	21.3
1994 Uninsured Pensioner Table With Projection to 2015 Under Scale AA	19.1	21.6
1994 Uninsured Pensioner Table With Projection to 2020 Under Scale AA	19.4	21.8
1994 Uninsured Pensioner Table—Generational Under Scale AA		
Current Age 65	19.8	22.1
Current Age 60	20.2	22.3
Current Age 55	20.5	22.5
Current Age 50	20.9	22.7
Current Age 45	21.3	22.9
Current Age 40	21.6	23.1
Current Age 35	22.0	23.3
Current Age 30	22.3	23.5

Impact of Assumption and Benefit Changes on Current Service Cost (continued)

- To break down the impact of assumption changes and benefit changes on the current service cost, following calculation performed:
  - For faculty/staff member entering at age 34 and a starting salary of $60,000 or $80,000, and retiring at age 64 with an unreduced pension, the level percentage of salary contribution required over the 30-year period to prefund the pension benefit
  - Calculation performed based on actuarial assumptions in effect at July 1, 1987 and July 1, 2012 and the pension benefit provisions in effect at July 1, 1987 and July 1, 2012

Impact of Assumption and Benefit Changes on Current Service Cost (continued)

- Following table based on participant with a spouse and 50/50 weighting of cost for male and female participants:

Benefit Provisions	July 1, 1987	July 1, 1987	July 1, 1987	July 1, 2012[1]	July 1, 2012[1]
Actuarial Assumptions	July 1, 1987	July 1, 2012 with 2.50% Real Discount Rate	July 1, 2012 with 3.75% Real Discount Rate	July 1, 2012 with 3.75% Real Discount Rate	July 1, 2012 with 2.50% Real Discount Rate
Starting Salary of $60,000	13.0%	20.4%	14.9%	19.4%	26.7%
Starting Salary of $80,000	15.4%	22.8%	16.6%	20.3%	27.9%

[1] Based on accrual rate of 1.5% below CPP maximum salary