

# **Funding Defined Benefit Pension Plans: Risk-Based Supervision in Ontario**

*Overview and Selected Findings  
2002-2006*

**Financial Services Commission of Ontario**

**March 2007**

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# **Funding Defined Benefit Pension Plans: Risk-Based Supervision in Ontario**

## *Overview and Selected Findings 2002-2006*

### **1.0 Introduction**

The Financial Services Commission of Ontario (FSCO) is an arm's length agency of the Ministry of Finance that regulates Ontario-registered pension plans in accordance with the *Pension Benefits Act* (PBA) and regulations.

In July 2000, FSCO implemented a risk-based approach to monitor the funding of defined benefit pension plans<sup>1</sup>. This approach involves the collection of key actuarial and financial data from funding valuation reports filed with FSCO, using a standard form called the Actuarial Information Summary (AIS)<sup>2</sup>. The collected data are entered into a database, and a selective risk-based review system identifies individual reports for detailed compliance reviews.

Between July 1, 2003 and January 31, 2007, AIS data for approximately 6,400 funding valuation reports were entered into our database and screened through the selective review system. Forty-two percent of these reports were selected for further review, and over 22% of the selected reports were identified as having material compliance concerns that required further follow up. With very few exceptions, FSCO has been able to resolve the identified concerns with the plans' actuaries and administrators.

The AIS database provides FSCO with the information it needs to compile the relevant pension data and to identify pension plan funding trends in Ontario, both of which are periodically reported back to pension stakeholders. This is FSCO's third report presenting some of these findings.

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<sup>1</sup> "Risk-based Supervision of the Funding of Ongoing Defined Benefit Pension Plans" (May 2000), an overview of the risk-based approach, is available at: <http://www.fSCO.gov.on.ca/english/pensions/riskbasedsupervision.pdf>

<sup>2</sup> The AIS is a standardized form, developed jointly by FSCO, the Canada Revenue Agency and the federal Office of the Superintendent of Financial Institutions. It is prepared by an actuary and filed with FSCO in conjunction with a funding valuation report.

## 1.1 Key Findings

Some of the key findings are:

- Most plans were less than fully funded at their last valuation date, which ranged between July 1, 2003 and June 30, 2006. In particular:
  - Seventy-eight percent of the plans were less than fully funded on a solvency basis.
  - The median solvency ratio was 86%.
- There has been a trend towards using more conservative assumptions in recent actuarial valuations. For example:
  - The average interest rate assumption used for going concern valuations decreased from 6.79% to 6.33% over the 2002 to 2005 valuation period.
  - Over 96% of the 2005 valuations used an up-to-date 1994 mortality table, compared to 47% of the 2002 valuations.
- The minimum required contributions for 2006, including employer normal cost contributions, member required contributions and special payments, were estimated to be \$7.5 billion, a 12% increase from the amount estimated for 2005. A large part of this increase was due to the higher special payments required to be made in respect of increasing funding deficits.
- The funding position of pension plans is expected to improve over 2006. In particular, the median solvency ratio for pension plans is projected to increase from 82% to 90% between the 2005 and 2006 year ends.

## 2.0 Statistical Analysis

This section summarizes some of the funding and actuarial data for defined benefit pension plans with valuation dates between July 1, 2003 and June 30, 2006. The data were compiled from the AIS and funding valuation reports received by FSCO on or before January 31, 2007.

Generally, funding valuation reports must be filed once every three years on both a going concern and solvency basis. However, if solvency concerns are indicated<sup>3</sup>, an annual filing is required until these concerns are eliminated. Early filings may also be required when events such as plan mergers, partial windups or sales of businesses occur. To avoid double counting, only the data from a plan's most recently filed report were included.

For the purposes of this report, designated plans<sup>4</sup>, plans where members are no longer accruing future benefits and plans with outstanding valuation reports have been excluded. In addition, seven very large public sector plans<sup>5</sup> have been excluded in order not to skew the results of our analysis.

In total, 1,698 plans were included in the statistical analysis. Table 1 presents a description of these pension plans.

**Table 1 – Summary of Plans Included**

<b>Plan/ Benefit Type</b>	<b># of Plans</b>	<b>Active Members</b>	<b>Retired Members</b>	<b>Other Beneficiaries</b>	<b>Total</b>	<b>Market Value of Assets (\$Million)</b>
Final Average	730	280,485	174,857	73,061	528,403	\$63,242
Career Average	271	52,825	23,665	12,965	89,455	\$4,336
Flat Benefit	394	138,423	109,179	38,319	285,921	\$24,942
Hybrid	224	101,814	80,495	43,478	225,787	\$19,161
Multi-Employer	79	359,198	90,938	283,731	733,867	\$16,274
<b>Total</b>	<b>1,698</b>	<b>932,745</b>	<b>479,134</b>	<b>451,554</b>	<b>1,863,433</b>	<b>\$127,955</b>

The average age of the membership for all included plans was 42.0 for active members and 71.2 for retired members.

<sup>3</sup> A report is said to indicate solvency concerns if (i) the solvency ratio is less than 80%, or (ii) the solvency ratio is between 80% and 90% and the solvency liabilities exceed the market value of assets by more than \$5 million. A plan's solvency ratio is the ratio of the market value of the plan's assets to the plan's solvency liabilities.

<sup>4</sup> Designated Plans are defined in section 8515 of the federal Income Tax Regulations. Generally, these are plans for connected persons and highly-paid executives.

<sup>5</sup> Based on the most recently filed reports, these seven public sector plans had a total membership exceeding one million (637,000 actives, 327,000 retirees and 151,000 other beneficiaries) and total assets of \$177 billion at market value. The average age of their membership was 43.8 for active members and 69.0 for retired members.

Compared with the findings in our previous report (June 2006<sup>6</sup>), there has been a decrease in the number of final average, career average and flat benefit plans, and an increase in the number of hybrid plans. Approximately 6% of the defined benefit plans have become hybrid plans since their previous valuation date; a further 4% have either been wound up or have frozen future accruals of defined benefits.

## 2.1 Summary of Funded Status

The main findings regarding the funded status of defined benefit pension plans are as follows:

- For all plans analyzed, the median funded ratios were 98% on a going concern basis and 86% on a solvency basis. Seventy-eight percent of the plans were less than fully funded on a solvency basis.
- Of the 730 final average earnings plans, 330 (45%) were fully funded on a going concern basis and 251 (34%) were fully funded on a solvency basis.
- Of the 271 career average earnings plans, 117 (43%) were fully funded on a going concern basis and 30 (11%) were fully funded on a solvency basis.
- Of the 394 flat benefit plans, 181 (46%) were fully funded on a going concern basis. On a solvency basis, flat benefit plans were the least well funded; 376 (95%) of these plans were less than fully funded and 206 (52%) had a solvency ratio of less than 80%.
- Of the 224 hybrid plans, 96 (43%) were fully funded on a going concern basis and 61 (27%) on a solvency basis.
- Of the 79 multi-employer pension plans (MEPPs), 53 (67%) were fully funded on a going concern basis and 20 (25%) on a solvency basis. Seventeen plans (22%) had a solvency ratio of less than 80%. These 17 plans have approximately 494,000 members and former members, that is, 67% of the total MEPP membership.

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<sup>6</sup>This report is available at: [http://www.fSCO.gov.on.ca/english/pensions/DB\\_Funding\\_Report\\_2006.pdf](http://www.fSCO.gov.on.ca/english/pensions/DB_Funding_Report_2006.pdf)

Tables 2 and 3 below provide a more detailed breakdown of the going concern and solvency funded ratios in respect of different types of defined benefit pension plans.

**Table 2 – Going Concern Funded Ratios**

<b>Funded Ratio (FR)</b>	<b>Final Average</b>	<b>Career Average</b>	<b>Flat Benefit</b>	<b>Hybrid</b>	<b>MEPP</b>	<b>All Plans</b>
FR < 0.60	10	4	4	4	1	23
0.60 ≤ FR < 0.80	53	15	32	13	3	116
0.80 ≤ FR < 0.90	142	50	72	46	5	315
0.90 ≤ FR < 1.00	195	85	105	65	17	467
1.00 ≤ FR < 1.20	257	95	127	68	45	592
FR ≥ 1.20	73	22	54	28	8	185
<b>Total</b>	<b>730</b>	<b>271</b>	<b>394</b>	<b>224</b>	<b>79</b>	<b>1,698</b>
Median Ratio	0.98	0.98	0.98	0.97	1.04	0.98

**Table 3 – Solvency Funded Ratios**

<b>Solvency Ratio (SR)</b>	<b>Final Average</b>	<b>Career Average</b>	<b>Flat Benefit</b>	<b>Hybrid</b>	<b>MEPP</b>	<b>All Plans</b>
SR < 0.60	9	10	22	10	4	55
0.60 ≤ SR < 0.80	104	92	184	51	13	444
0.80 ≤ SR < 0.90	205	86	131	68	12	502
0.90 ≤ SR < 1.00	161	53	39	34	30	317
1.00 ≤ SR < 1.20	159	19	13	43	15	249
SR ≥ 1.20	92	11	5	18	5	131
<b>Total</b>	<b>730</b>	<b>271</b>	<b>394</b>	<b>224</b>	<b>79</b>	<b>1,698</b>
Median Ratio	0.92	0.82	0.80	0.87	0.92	0.86

## 2.2 Summary of Actuarial Assumptions and Methods

The key actuarial assumptions and methods used in the funding valuation reports are as follows:

- Ninety-eight percent of the plans used the unit credit cost method (with salary projection for final average plans) to calculate the going concern liabilities.
- Assets were most frequently valued using a market or market-related approach, with 98% of the plans using either a market or smoothed market value.
- For going concern valuations, approximately 15% of the plans used a mortality assumption based on the 1983 Group Annuity Mortality (GAM) table developed by the Society of Actuaries, while 84% used a more up-to-date 1994 table (GAM, Group Annuity Reserving (GAR) or Uninsured Pensioner (UP)). The 1994 UP (with or without projection of mortality improvement) was the most popular choice<sup>7</sup>.

**Table 4 – Liability Valuation Method**

<b>Liability Valuation Method</b>	<b># of Plans</b>	<b>% of Plans</b>
Unit Credit	1,661	97.8%
Entry Age Normal	21	1.2%
Aggregate	6	0.4%
Other	10	0.6%
<b>Total</b>	<b>1,698</b>	<b>100.0%</b>

**Table 5 – Asset Valuation Method**

<b>Asset Valuation Method</b>	<b># of Plans</b>	<b>% of Plans</b>
Market	1,056	62.2%
Smoothed Market	615	36.2%
Book	10	0.6%
Book & Market Combined	15	0.9%
Other	2	0.1%
<b>Total</b>	<b>1,698</b>	<b>100.0%</b>

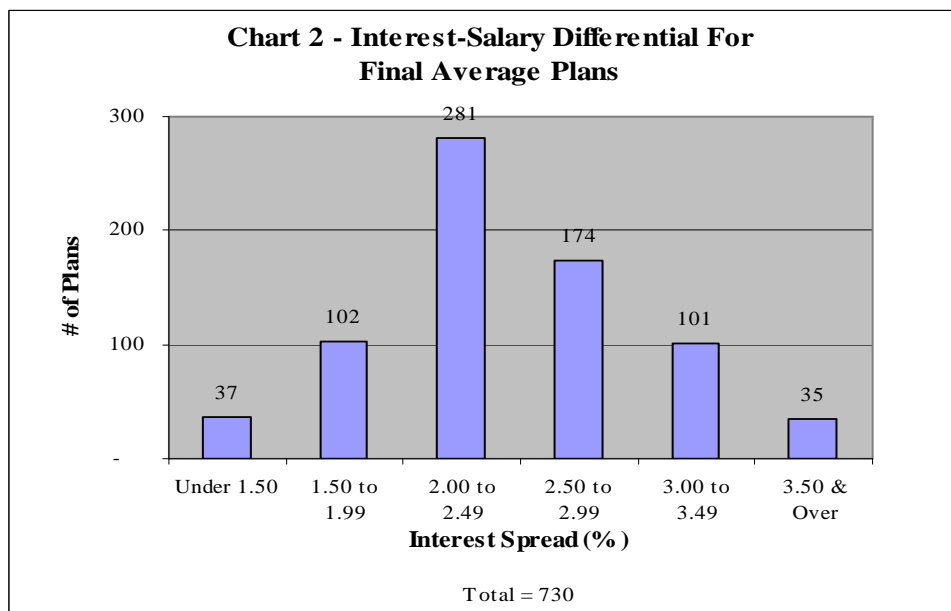
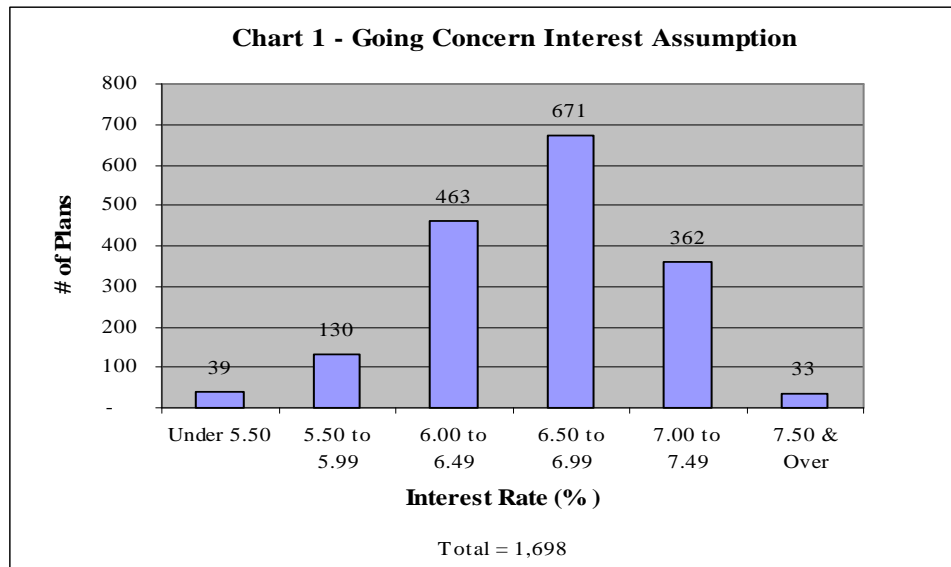
**Table 6 – Mortality Assumption**

<b>Mortality Assumption</b>	<b># of Plans</b>	<b>% of Plans</b>
1983 GAM	256	15.1%
1994 GAM Static	255	15.0%
1994 GAR	22	1.3%
1994 UP	1,152	67.8%
Other	13	0.8%
<b>Total</b>	<b>1,698</b>	<b>100.0%</b>

<sup>7</sup> Also see commentary on mortality assumptions that accompanies Table 11 in this report.



- Interest rate assumptions used to value the going concern liabilities fell within a relatively tight range, with approximately 88% of the plans using a rate between 6.0% and 7.0%<sup>8</sup>.
- For final average earnings plans, the difference between the interest assumption and the salary increase assumption used in going concern valuations typically fell within a range of 1.5% to 3.0% (accounting for almost 88% of all final average plans)<sup>9</sup>.



<sup>8</sup> Of the 362 plans that used a going concern interest rate assumption in the range of 7.00% to 7.49%, 358 plans actually used an interest rate of 7.00%.

<sup>9</sup> Of the 101 final average plans with interest-salary differential in the range of 3.00% to 3.49%, 85 plans had an interest-salary differential of 3.00%.

- Table 7 shows the total wind up expense allowance made in solvency valuations by plan membership size, including members, former members and other beneficiaries<sup>10</sup>. The expense allowance is also expressed in average dollar amounts per plan and per plan member. The average expense allowance per member generally decreases as plan membership size increases. The reverse pattern appears to occur for plans with 5,000 or more members; however, because there are only a small number of these plans, greater caution should be exercised when interpreting the results for plans of this size.

**Table 7 – Provision for Wind Up Expenses**

<b>Plan Membership</b>	<b># of Plans</b>	<b>Total Membership</b>	<b>Total Wind Up Expenses</b>	<b>Average Wind Up Expenses</b>	
				<b>Per Plan</b>	<b>Per Member</b>
<100	548	25,723	\$22,366,490	\$40,815	\$870
100-499	615	149,905	\$56,675,200	\$92,155	\$378
500-999	199	134,303	\$35,342,100	\$177,598	\$263
1,000-4,999	234	490,669	\$93,824,600	\$400,960	\$191
5,000-9,999	28	194,408	\$36,785,000	\$1,313,750	\$189
10,000-49,999	25	438,674	\$124,531,000	\$4,981,240	\$284
<b>Total</b>	<b>1,649</b>	<b>1,433,682</b>	<b>\$369,524,390</b>	<b>\$224,090</b>	<b>\$258</b>

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<sup>10</sup> Two plans, each with more than 50,000 members and other beneficiaries, were excluded from this analysis, as were those plans for which no wind up expense assumption was made.

## 2.3 Estimated Funding Contributions in 2006

Table 8 presents the estimated funding contributions, including special payments, which are expected to be made in respect of defined benefits in 2006, including those related to defined benefit provisions under hybrid plans. The estimates are based on information from the most recently filed funding valuation reports with valuation dates between July 1, 2003 and June 30, 2006.

**Table 8 – Estimated Funding (\$Million) of Defined Benefits in 2006**

	<b>Plans with Solvency Excess</b>	<b>Plans with Solvency Deficit</b>	<b>All Plans</b>
Number of Plans	394	1,304	1,698
Employer Normal Cost Contributions	\$1,121	\$2,029	\$3,150
Member Required Contributions	\$270	\$258	\$528
<b>Aggregate Normal Costs</b>	<b>\$1,391</b>	<b>\$2,287</b>	<b>\$3,678</b>
Special Payments	\$101	\$3,725	\$3,826
<b>Total</b>	<b>\$1,492</b>	<b>\$6,012</b>	<b>\$7,504</b>

Table 8 also provides a breakdown of the estimated funding contributions between plans that had a solvency excess and plans that had a solvency deficit. The aggregate special payments for plans with a solvency excess (\$101 million) represent 7% of the aggregate normal costs (\$1.4 billion). This compares with the aggregate special payments for plans with a solvency deficit (\$3.7 billion), which represent 163% of the aggregate normal costs (\$2.3 billion). The total estimated funding for 2006 amounts to \$7.5 billion.

This \$7.5 billion estimate for 2006 represents a 12% increase from the 2005 estimate of \$6.7 billion, presented in our previous report (June 2006). A large part of this increase was due to the higher special payments required to be made in respect of increasing funding deficits.

### 3.0 Trends Analysis

The following trends analysis incorporates data from all filed reports with valuation dates between July 1, 2002 and June 30, 2006<sup>11</sup>.

#### 3.1 Solvency Funded Status

Table 9 shows a breakdown of plans by solvency ratios for the following valuation years:

- 2002 valuation year: July 1, 2002 to June 30, 2003
- 2003 valuation year: July 1, 2003 to June 30, 2004
- 2004 valuation year: July 1, 2004 to June 30, 2005
- 2005 valuation year: July 1, 2005 to June 30, 2006

The majority of plans have a valuation date of either December 31 or January 1. Plans having solvency concerns are required to file valuation reports annually and, therefore, would appear in our database for more than one valuation year.

**Table 9 - Solvency Ratios by Valuation Year**

Solvency Ratio (SR)	2002		2003		2004		2005	
	# of Plans	% of Plans	# of Plans	% of Plans	# of Plans	% of Plans	# of Plans	% of Plans
SR < 0.60	69	7.7%	47	4.7%	34	3.6%	33	4.4%
0.60 ≤ SR < 0.80	382	42.8%	385	38.3%	317	33.4%	308	41.5%
Sub-Total < 0.8	451	50.5%	432	43.0%	351	37.0%	341	45.9%
0.80 ≤ SR < 0.90	147	16.5%	257	25.6%	286	30.2%	184	24.8%
0.90 ≤ SR < 1.00	82	9.2%	140	13.9%	144	15.2%	102	13.7%
Sub-Total < 1.00	680	76.2%	829	82.5%	781	82.4%	627	84.4%
1.00 ≤ SR < 1.20	117	13.1%	115	11.5%	117	12.3%	78	10.5%
SR ≥ 1.20	96	10.7%	60	6.0%	50	5.3%	38	5.1%
Total	893	100.0%	1,004	100.0%	948	100.0%	743	100.0%
Median Ratio	0.80		0.82		0.83		0.81	

Table 9 shows a decline in the median solvency ratio from 0.83 in 2004 to 0.81 in 2005. Underfunded plans accounted for 84.4% of the plans that filed a 2005 valuation, compared with 82.4% of those plans that filed a 2004 valuation. The proportion of reports showing a solvency ratio of less than 80% increased from 37.0% in 2004 to 45.9% in 2005.

<sup>11</sup> Plans that had outstanding funding valuation reports were excluded from the analysis in FSCO's previous report (June 2006). Some of those outstanding reports have since been filed. Therefore, the number of plans in each of the 2002, 2003 and 2004 valuation years is somewhat higher than in the previous report.

While the investment performance of pension funds remained strong in 2005, the decline in bond yields, combined with the introduction of the Canadian Institute of Actuaries' new transfer value basis, effective February 1, 2005, more than offset the favourable impact of investment gains. In particular, the solvency funding position of pension plans in 2005 was affected by the following factors:

- Pension fund returns were strong, with a median return of 11.8%.
- There was a decline in long term bond yields, combined with a change in the CIA transfer value basis. In particular:
  - Solvency interest rates decreased from 5.5% for the first 15 years and 6.0% thereafter (effective at the beginning of the year) to 4.5% for the first 10 years and 5.0% thereafter (effective at the end of the year).
  - The mortality assumption changed from 1983 GAM to 1994 UP with projection for mortality improvement to year 2015.
- Deficit reduction special payments were made or contribution holidays were taken, which had positive and negative effects, respectively.

Chart 3 shows the distribution of solvency ratios at different percentiles. The solvency ratios at all percentiles experienced a small decrease from the 2004 valuation year to the 2005 valuation year.

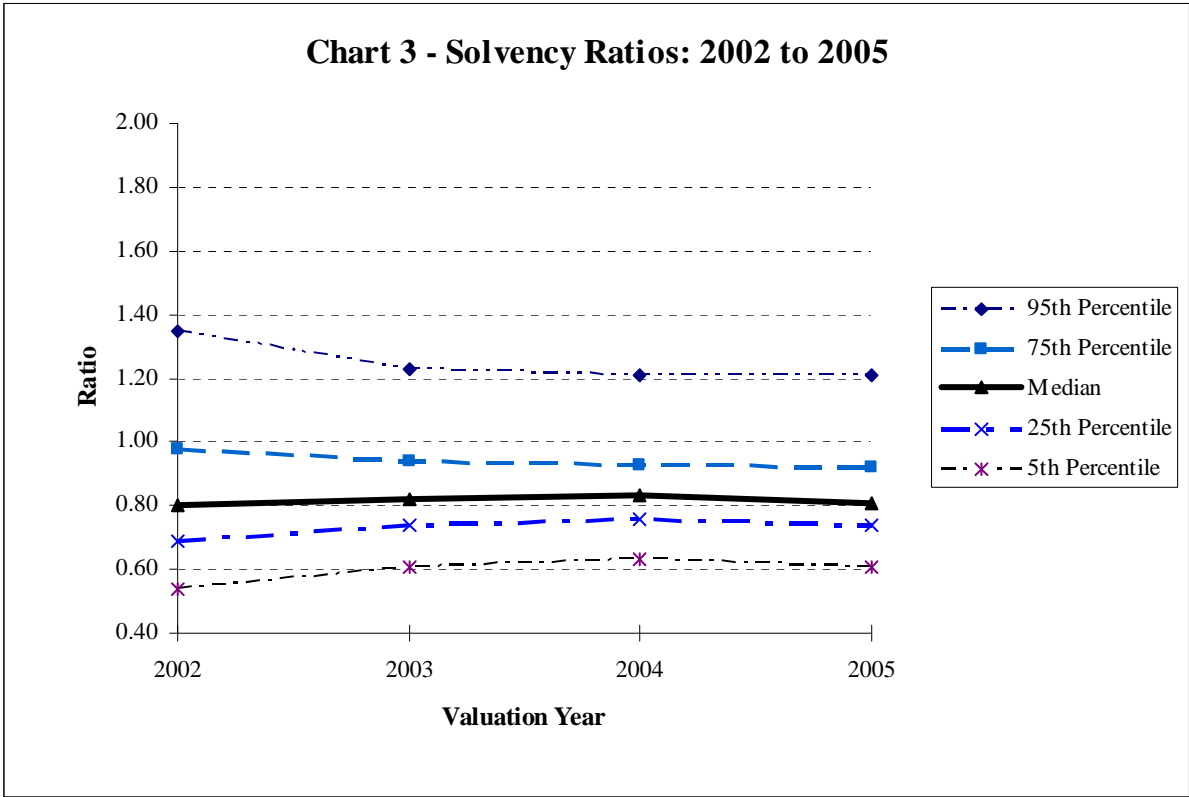
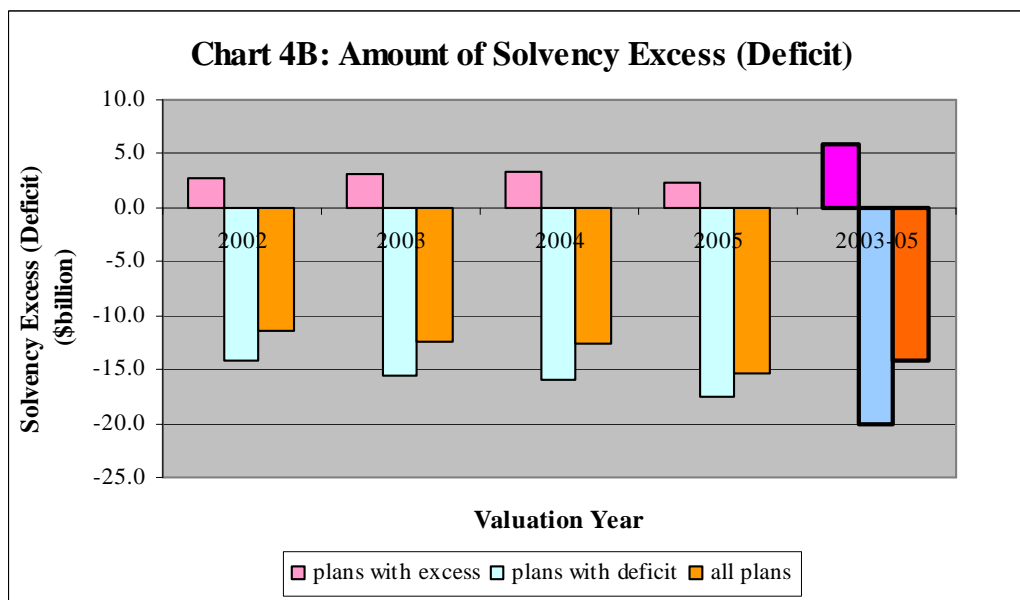
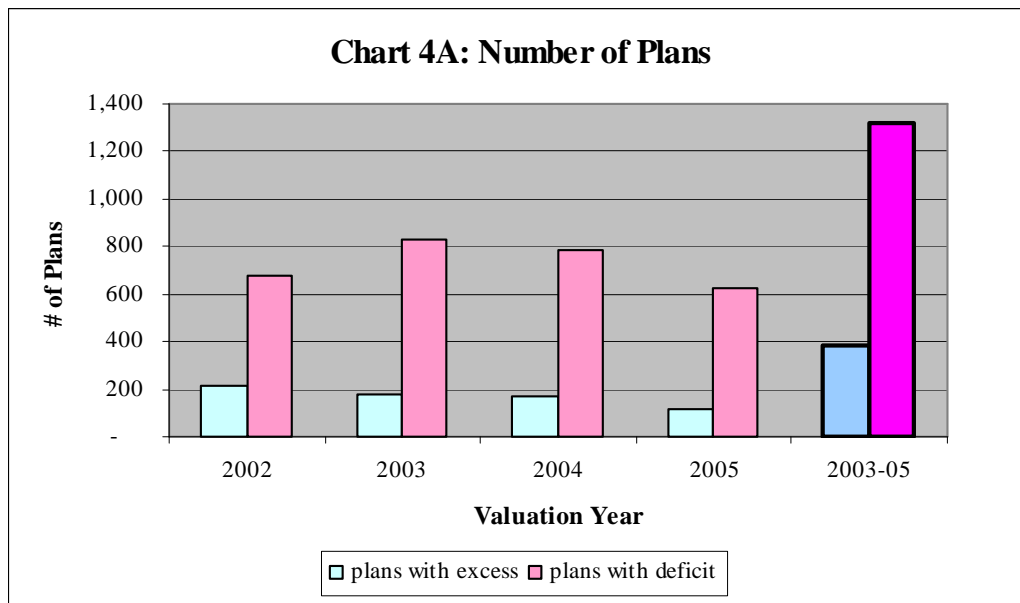


Chart 4 compares plans with a solvency excess to those with a solvency deficit for each of the four valuation years from 2002 to 2005, as well as for the three-year valuation period of 2003 to 2005. Chart 4A compares the number of plans and Chart 4B compares the amount of solvency excess (deficit)<sup>12</sup>.

**Chart 4 - Solvency Funding Positions of Ontario Defined Benefit Plans**



<sup>12</sup> Note that the individual valuation years include those plans that filed a report with a valuation date that fell during that individual year. However, the 2003 to 2005 period includes only the last funding valuation report filed for a plan with a valuation date falling in the period July 1, 2003 to June 30, 2006. Thus, the sum of the number of plans included in each of the 2003, 2004 and 2005 valuation years is higher than the number of plans included in the combined period 2003 to 2005.

On a dollar amount basis, plans that filed a report within the three valuation years, 2003 to 2005, reported a *net* solvency deficit of \$14.1 billion (after allowance for expenses) on solvency liabilities of \$141.9 billion. This represents the aggregate level of underfunding for the defined benefit plans registered in Ontario, exclusive of the seven public sector plans and the other excluded plans previously described.

Ontario's legislation allows certain benefits (e.g., post-retirement indexation, consent benefits, plant closure and permanent layoff benefits) to be excluded in the calculation of solvency liabilities. There were 197 plans that excluded one or more of these benefits, resulting in a reduction of liabilities in the amount of \$9.4 billion. Thus, the aggregate *wind up* funding deficit for those plans that filed a report within the three valuation years, 2003 to 2005, would have exceeded their *net* solvency deficit by the same amount. This translates into a wind up funding deficit of \$23.5 billion (\$14.1 plus \$9.4), after allowance for expenses, on wind up liabilities of \$151.3 billion.

### 3.2 Actuarial Assumptions

Table 10 shows the interest rate assumptions used in the going concern valuations. There is a clear trend of using lower interest rate assumptions since 2002. The average of the assumed interest rates declined from 6.79% to 6.33% over the four valuation years, 2002 to 2005. As a comparison, the Canadian Institute of Actuaries recommended the following select-period interest rates for computing minimum transfer values: 6.25% (2002), 6% (2003), 5.5% (2004) and 4.5% (2005).

**Table 10 - Interest Rate Assumption by Valuation Year**

Rate (%)	2002		2003		2004		2005	
	# of Plans	% of Plans	# of Plans	% of Plans	# of Plans	% of Plans	# of Plans	% of Plans
Rate < 5.50	2	0.2%	5	0.5%	11	1.2%	27	3.6%
5.50 ≤ Rate < 6.00	7	0.8%	21	2.1%	52	5.5%	75	10.1%
6.00 ≤ Rate < 6.50	104	11.6%	189	18.8%	237	25.0%	215	28.9%
6.50 ≤ Rate < 7.00	275	30.8%	367	36.6%	373	39.3%	322	43.4%
7.00 ≤ Rate < 7.50	430	48.2%	391	38.9%	256	27.0%	96	12.9%
Rate ≥ 7.50	75	8.4%	31	3.1%	19	2.0%	8	1.1%
<b>Total</b>	<b>893</b>	<b>100.0%</b>	<b>1,004</b>	<b>100.0%</b>	<b>948</b>	<b>100.0%</b>	<b>743</b>	<b>100.0%</b>
Average (%)	6.79%		6.65%		6.51%		6.33%	

Table 11 shows the relative frequency of the mortality tables used in going concern valuations. An increasing number of plans are using more up-to-date mortality tables, i.e., the 1994 tables (GAM, GAR, UP). In the 2002 valuation year, 47% of the plans used a 1994 table; this percentage increased to 96% by the 2005 valuation year.

The trend towards using more up-to-date mortality tables is particularly evident with the 1994 UP table. The proportion of plans using that table (with or without projection for mortality improvement) has increased each year since 2002, from 24.1% in 2002 to 85.5% in 2005.

**Table 11 - Mortality Assumption by Valuation Year**

<b>Mortality Assumption</b>	<b>2002</b>		<b>2003</b>		<b>2004</b>		<b>2005</b>	
	<b># of Plans</b>	<b>% of Plans</b>	<b># of Plans</b>	<b>% of Plans</b>	<b># of Plans</b>	<b>% of Plans</b>	<b># of Plans</b>	<b>% of Plans</b>
1983 GAM	463	51.9%	348	34.7%	136	14.4%	21	2.8%
1994 GAM static	184	20.6%	213	21.2%	172	18.1%	74	10.0%
1994 GAR	20	2.2%	19	1.9%	7	0.7%	7	0.9%
1994 UP	215	24.1%	410	40.8%	624	65.8%	635	85.5%
Other	11	1.2%	14	1.4%	9	1.0%	6	0.8%
<b>Total</b>	<b>893</b>	<b>100.0%</b>	<b>1,004</b>	<b>100.0%</b>	<b>948</b>	<b>100.0%</b>	<b>743</b>	<b>100.0%</b>

### **3.3 Projected Solvency Position as at December 31, 2006**

This section presents our projections of the solvency funding position of defined benefit plans to the end of 2006 by capturing the impact of investment returns, changes in solvency interest rates and the special payments expected to be made during 2006. The methodology and assumptions used are described below.

#### ***Methodology and Assumptions***

The results reported in the last filed funding valuation (i.e., assets and liabilities) were first adjusted, where appropriate, to reflect the financial conditions as at December 31, 2005. The adjusted results were then projected to the end of 2006, using the following assumptions:

- Sponsors would use all available funding surplus, subject to any statutory restrictions, for contribution holidays;
- Sponsors would make the normal cost contributions and special payments, if required, at the statutory minimum level; and
- Amounts of cash outflow would be the same as the pension amounts payable to retired members as reported in the last filed funding valuation.



The median investment returns of pension funds (shown in Table 12 below) were used to project the market value of assets. The actual investment performance of individual plans was not reflected.

**Table 12 – Median Pension Fund Returns**

<b>Year</b>	<b>Annual Rate of Return<sup>13</sup></b>
2002	-3.9%
2003	13.5%
2004	10.1%
2005	11.8%
2006	13.0%

The projected liabilities as at December 31, 2005 and December 31, 2006 were determined by extrapolating the solvency liabilities from the last valuation, and then adjusting them to reflect any changes in the solvency valuation basis as provided in Table 13.

**Table 13 – Solvency Liability Projection Basis**

<b>Valuation Date</b>	<b>Commuted Value Basis</b>	<b>Annuity Purchase Basis</b>
December 31, 2005	Interest: 4.5% for 10 years, 5% thereafter Mortality: 1994 UP projected to 2015	Interest: 4.5% Mortality: 1994 UP projected to 2015
December 31, 2006	Interest: 4.75% for 10 years, 4.75% thereafter Mortality: 1994 UP projected to 2015	Interest: 4.5% Mortality: 1994 UP projected to 2015

<sup>13</sup> For years 2002 to 2005, the rates are the median investment returns of pension funds provided in the Canadian Institute of Actuaries' *A Report on Canadian Economic Statistics 1924-2005*, dated March 2006. The rate for 2006 is the Canadian pooled balanced pension fund median return in accordance with the Mercer Investment Consulting's Pooled Fund Survey.

## ***Projection Results***

Table 14 presents the distribution of solvency ratios that were reported in the filed funding valuations and the distribution of projected solvency ratios (PSRs) derived from the projected assets and liabilities.

**Table 14 – Distribution of Solvency Ratios**

<b>Distribution of Solvency Ratio</b>	<b>As at Last Filed Valuation</b>	<b>PSR as at December 31, 2005</b>	<b>PSR as at December 31, 2006</b>
10 <sup>th</sup> Percentile	71%	70%	78%
25 <sup>th</sup> Percentile	79%	76%	84%
50 <sup>th</sup> Percentile	86%	82%	90%
75 <sup>th</sup> Percentile	99%	91%	99%
90 <sup>th</sup> Percentile	115%	105%	110%

The median PSR would increase from 82% to 90% between December 31, 2005 and December 31, 2006. This improvement in the funding position is due mainly to the better than expected returns of pension funds and the special payments expected to be made during 2006.

The solvency valuation basis in effect on December 31, 2006 was about the same as that in effect on December 31, 2005. Accordingly, it is not expected to have an appreciable impact on the funding position of pension plans.

## 4.0 Glossary

The following terms are explained for the purpose of this report, “Funding Defined Benefit Pension Plans: Risk-Based Supervision in Ontario (March 2007).

**Defined Benefit Pension Plan:** In a defined benefit pension plan, the amount of the pension benefit is determined by a defined formula, usually based on years of service. There are several types of defined benefit plans, including:

- **Final Average** – the benefit is normally based on the member’s average earnings over the member’s last several years (typically three or five) of employment and years of service;
- **Career Average** – the benefit is normally based on the member’s earnings over the member’s entire period of service; and
- **Flat Benefit** – the benefit is normally based on a fixed dollar amount for each year of service.

**Defined Contribution Pension Plan:** In a defined contribution plan, the amount of the pension benefit is based solely on the amount contributed to the member’s individual account together with any expenses and investment returns allocated to that account.

**Funded Ratio:** The funded ratio of a plan is the ratio of the plan’s assets to the plan’s liabilities. For example, the *solvency funded ratio* (or *solvency ratio*) is the ratio of the plan’s assets to the plan’s liabilities on a solvency basis.

**Funding Valuation:** This is a valuation of a defined benefit pension plan prepared for funding purposes. Two types of valuations are required by the PBA: a *going concern* valuation, which assumes the pension plan will continue indefinitely; and a *solvency* valuation, which assumes the plan will be fully wound up as at the effective date of the valuation. Under Ontario’s legislation, a solvency valuation may exclude the value of specified benefits, for example, indexation and prospective benefit increases.

**Hybrid Pension Plan:** A hybrid pension plan contains both defined benefit and defined contribution provisions.

**Liability and Asset Valuation Methods:** These are the actuarial methods used by actuaries to value the liabilities and assets of a pension plan.

**Multi-Employer Pension Plan:** A multi-employer pension plan covers the employees of two or more employers and is specifically defined in the legislation.

**Smoothed Market Value:** The smoothed market value is determined by using an averaging method that stabilizes short-term fluctuations in the market value of plan assets, normally calculated over a period of not more than five years.