# Defined Benefit Occupational Pension Plans
# Members and Funding

## 2000-2005

## Statistical Report

**Prepared for**

## Ontario Expert Commission of Pensions

**by**


## Informetrica Limited
## 2007

Richard Shillington


Informetrica Limited

# 1 Table of Technical Terms, Acronyms and Abbreviations

| | |
|---|---|
| **AIS** | Actuarial Information Summary, one of the data gathering tools of the Financial Services Commission of Ontario. |
| **Combination (plan)** | A reference to pension plans that offer some combination of benefit options, such as a combination of defined benefit and defined contribution benefit options. |
| **DB (plan)** | Defined benefit plans, a particular type of benefit provided by pension plans. |
| **DC (plan)** | Defined contribution plans, a particular type of benefit provided by pension plans. |
| **FSCO** | Financial Services Commission of Ontario, the regulator of pension plans in the Ontario jurisdiction. |
| **Hybrid (plan)** | A reference to pension plans with characteristics of more than one type of benefit, such as DC and DB plan characteristics. |
| **MEPP** | Multi-employer pension plan, a type of pension plan. |
| **O(S)** | A special non-standard group mortality table specified in the filing. |
| **OECP** | Ontario Expert Commission on Pensions. |
| **SEPP** | Single-employer pension plan, a type of pension plan. |
| **71G** | 1971 Group Annuity, a standard mortality table. |
| **83G** | 1983 Group Annuity, a standard mortality table. |
| **83GW** | 1983 Group annuity mortality table, a standard mortality table. |
| **94(UP)** | 1994 Uninsured Pension mortality table, a standard mortality table. |
| **94GAR** | 1994 Group Annuity Reserving mortality table, a standard mortality table. |
| **94GS** | Group Annuity Mortality – Static, a standard mortality table with a 7% margin. |

# Occupational Pension Plan Funding in Ontario

## 2 Objectives of Study

This document presents statistical information concerning the occupational pension plan funding of pension plans registered in Ontario under the *Pension Benefits Act* (Ontario). Data for this analysis were provided by the Financial Services Commission of Ontario (FSCO).

## 3 Specifications

The FSCO data were provided in databases of their Actuarial Information Summary (AIS) for the years 1997-2006.

By regulation, defined benefit (DB) pension plans in Ontario are required to conduct actuarial valuations of the plans at least once every three years. The actuarial valuation provides an assessment of the assets, liabilities, membership and other key information about the pension plan (in effect, a snapshot of the "health" of the pension plan), and provides information about the assumptions upon which the assessment is based. The actuarial valuation is summarized in the AIS and filed with FSCO. These filings form the basis of the data presented below.

## 4 Data Restrictions and Limitations

FSCO provided the OECP and the author with a longitudinal file of data for the period 1997 to 2007. The file included summary data from the AIS filings for those years. Not all years had complete data for each file. As a result, the period presented in the tables in this report is 2000-2005, the period for which the most AIS reports contained the most data, and fewest missing reports or errors.

An AIS is filed by each registered plan in Ontario at least once every three years in the normal course, but every year in the event the plan has unfunded liabilities on a solvency basis of more than 20% of total liabilities of the pension plan, e.g., if the funded ratio is less than 0.8. In effect, adequately-funded plans may file fewer AISs than under-funded plans. Therefore, in any given year, not all registered pension plans will file an AIS.

In order to facilitate better year-over-year comparisons of the same population of plans, the tables below presents all plans that have filed an AIS at any time during the 10 year period in each year (even if they have not filed in that particular year). To do so, it creates a value for each variable reported in an AIS for each year, using one of two sources: the value for that variable reported in the year by an AIS, or the value for that variable reported in the most recent year that an AIS was filed. For example, ABC plan files an AIS in 2000 and reports 1,500 members, and files a second report in 2003, when it reports having 1,700 members. In the tables below, for the years 2000, 2001 and 2002, plan ABC is presented as having 1,500 members, and in 2003, is reported as having 1,700 members.

Users should also be aware of the limitations to these data implied by the AIS reporting method itself. Where possible, these limitations are noted below. AISs and standards that apply to the

reporting of financial information about pension plans permit some flexibility in reporting. For example, the changes in the value of assets in any given year may be "smoothed" for up to five years, and not "marked to market" in that reporting year. This technique can delay the full recognition of gains and losses over time. Users should be aware that tracking funding information of pension plans over a 5-year period is therefore a very short time-frame to draw conclusions about trends in the financial information reported in an AIS and presented in summary form in this report.

Users should also be aware that in the process of producing this report, the author and the OECP identified several limitations to the existing data sets from FSCO, which included changes in data gathering tools over time and changes or errors in coding, and other limitations. Where these limitations bear on the report's finding below, they are explained in a note.

# 5 Executive Summary

This report presents certain occupational pension plan funding information for a relatively brief five-year snapshot, 2000-2005. This period has been considered one of the worst periods for pension plan funding status in recent history. It begins in 2000, at the end of a long bull market in equities, and ends in 2005, after a period of prolonged low interest rates.

This report presents nine series of tables tracking key pension plan funding information, which support the following conclusions about members and assets in DB plans regulated by FSCO:

- Overall, going concern and solvency funding ratios both deteriorated somewhat between 2000 and 2003, and then improved slightly by 2005.

- On a going concern funding basis:

    - By 2005, 93% of plans were more than 80% funded, down from 96% in 2000 (and 75.8% of plans were 90% or better funded on a going concern basis, down from 91% in 2000).
    - However, 95% of members were in plans 80% funded or better in 2005, down from 99% in 2000, and 87.8% of members were in plans funded 90% or better in 2005; and
    - 98% of assets were within plans 80% funded or better in 2005, down from 99% in 2000.

- On a solvency funding basis:

    - 72% of plans were funded 80% or better in 2005, down from 90% in 2000 (and 45% of plans were funded 90% or better, down from 77% in 2000).
    - However, 81.8% of members (83.3% active members) were in plans 80% funded or better in 2005, down from 93% in 2000, and 71% of members in plans funded 90% or better in 2005; and
    - 89% of assets were in plans funded 80% or better in 2005, down from 98% in 2000.

- Examining these changes over the period:

    - About 70% of members (73% actives) and 75% of assets were in plans that showed some decrease in going concern funded status.
    - About 67% of members (68% actives) and 66.7% of assets were in plans that showed a decrease in solvency funded status.

- Plans, members and assets in plans that were 80% funded or better at the beginning of this period are very likely to continue to be 80% funded or better in a subsequent valuation during the period. Similarly, plans, members and assets in plans that were less

than 80% funded, or very seriously under-funded tended to continue to be under-funded in subsequent valuations during the period.

- The median ultimate interest rate used in going concern valuations reduced from 7.0% in 2000 to 6.5% in 2005.

- The commuted value rate prescribed by the Canadian Institute of Actuaries declined over the same period, from about 6.5% to 4.5% for non-indexed benefits, and from just over 4% to just over 2% for indexed benefits (but has risen again since 2005).

- Most plans shifted from using the 83G mortality table to the 94UP mortality table between 2000 and 2005. By 2005, over 80% of members were in plans using the 94UP or a non-standard mortality table.

    - A significant minority of plans accounting for 18% of membership employed a non-standard mortality table, indicating that these may be large public sector plans employing their own mortality tables.

In conclusion, overall, there has been significant number of plans showing a decrease in the funded status, particularly on a solvency basis. However, after the "perfect storm", when we examine the membership and assets in those plans, 70% or more of members and assets are in plans that are 80% funded or better on a solvency basis in 2005. It is likely that funded ratios have improved between 2005 and 2007, although by the end of 2007, they may have stopped improving or be deteriorating, primarily as a result of poor performance in the securities markets and very recent reductions in short-term interest rates (however, long-term interest rates have not significantly reduced, yet).

Assumptions as a whole have reflected the funding environment. Going concern interest rate assumptions continue to be higher than prescribed solvency interest rates, but have reduced over the period. On the whole, mortality table assumptions have been "updated" to reflect more recent mortality tables.

# 6 Members and Assets By Occupational Pension Plan Funding Ratios

Section 5 presents several series of tables, each presenting a different set of variables reported in the AIS for the 5-year period. The plan population presented below is "non-designated plans" defined benefit pension plans. "Non-designated" is defined as plans with five or more members. This exclusion is designed to exclude a significant number of individual pension plans with very few members.

## 6.1 Series 1, Members and Assets by Going Concern Funding Ratios

Series 1 presents "going concern" funding ratios, which are the ratio of assets to liabilities, both on a "going concern" basis. This is the basis and set of assumptions used to determine the funded status of an occupational pension plan on the theory that it will continue to operate. This is also the basis for determining the "normal cost" of pension contributions for the period covered by the actuarial valuation. This series and all following series present the breakdown of plans within various funded ratios over 5 years.

Table 1 (next page) shows the number of actuarial valuations (AISs), which is a proxy for the number of plans, filed in each year by the funded ratio they disclose on a going concern basis. It shows an increase in plans from about 1,500 plans in 2000 to about 1,700 plans in 2005. This indicates 200 new DB plans in this period, however, this increase does not necessarily reflect new DB plans, but may reflect new registrations of plans arising through splits and divestments, or reflect limits in the data set itself. The analysis of new plans in the subject of a separate research project.

[This space intentionally left blank. Figures continue on next page.]

**Table 1: Number of Plans**

| | GC Funding Ratio | | | | | | GC Funding Ratio | | |
|---|---|---|---|---|---|---|---|---|---|
| | < 60% | 60-80% | 80-90% | 90-100% | 100-120% | 120% + | < 80% | 80% + | All |
| **Year** | | | | | | | | | |
| **2000** | 13 | 43 | 78 | 191 | 667 | 517 | 56 | 1,453 | 1,509 |
| **2001** | 12 | 54 | 101 | 212 | 727 | 515 | 66 | 1,555 | 1,621 |
| **2002** | 24 | 154 | 221 | 271 | 597 | 402 | 178 | 1,491 | 1,669 |
| **2003** | 24 | 173 | 312 | 405 | 493 | 282 | 197 | 1,492 | 1,689 |
| **2004** | 17 | 145 | 332 | 455 | 494 | 260 | 162 | 1,541 | 1,703 |
| **2005** | 11 | 119 | 281 | 456 | 582 | 263 | 130 | 1,582 | 1,712 |

**Table 2: Percent of Plans**

| | GC Funding Ratio | | | | | | GC Funding Ratio | | |
|---|---|---|---|---|---|---|---|---|---|
| | < 60% | 60-80% | 80-90% | 90-100% | 100-120% | 120% + | < 80% | 80% + | All |
| Year | | | | | | | | | |
| **2000** | 1 | 2 | 5 | 13 | 44 | 34 | 4 | 96 | 100 |
| **2001** | 1 | 3 | 6 | 13 | 45 | 32 | 4 | 96 | 100 |
| **2002** | 1 | 9 | 13 | 16 | 36 | 24 | 11 | 89 | 100 |
| **2003** | 1 | 10 | 18 | 24 | 29 | 17 | 12 | 88 | 100 |
| **2004** | 1 | 9 | 19 | 27 | 29 | 15 | 16 | 84 | 100 |
| **2005** | 1 | 7 | 16 | 27 | 34 | 15 | 8 | 92 | 100 |

**Table 3: Sum of Active Members (000's)**

| | GC Funding Ratio | | | | | | GC Funding Ratio | | All |
|---|---|---|---|---|---|---|---|---|---|
| | < 60% | 60-80% | 80-90% | 90-100% | 100-120% | 120% + | < 80% | 80% + | |
| **Year** | | | | | | | | | |
| **2000** | 4 | 8 | 40 | 118 | 886 | 188 | 12 | 1,231 | 1,243 |
| **2001** | 3 | 12 | 70 | 141 | 918 | 176 | 15 | 1,305 | 1,320 |
| **2002** | 4 | 58 | 116 | 164 | 887 | 130 | 62 | 1,297 | 1,359 |
| **2003** | 3 | 88 | 164 | 158 | 873 | 70 | 92 | 1,265 | 1,357 |
| **2004** | 5 | 61 | 142 | 465 | 636 | 63 | 66 | 1,306 | 1,372 |
| **2005** | 5 | 54 | 84 | 675 | 488 | 62 | 59 | 1,309 | 1,368 |

Table 3 shows the number of active members belonging to DB pension plans by funded ratio in each year. Table 4 shows the percentage of active DB members belonging to DB pension plans by funded ratio in each year, (note that this membership does not include DC and other pension plan membership). It shows a small increase in the proportion of active members within under-funded plans between 2000 and 2004, and a slight decrease in 2005.

**Table 4: Percent of Active Members (000's)**

| | GC Funding Ratio | | | | | | GC Funding Ratio | | All |
|---|---|---|---|---|---|---|---|---|---|
| | < 60% | 60-80% | 80-90% | 90-100% | 100-120% | 120% + | < 80% | 80% + | |
| **Year** | | | | | | | | | |
| **2000** | 0.3 | 0.6 | 3.2 | 9.5 | 71.2 | 15.1 | 1.0 | 99.0 | 100.0 |
| **2001** | 0.2 | 0.9 | 5.3 | 10.7 | 69.6 | 13.3 | 1.1 | 98.9 | 100.0 |
| **2002** | 0.3 | 4.2 | 8.5 | 12.0 | 65.3 | 9.6 | 4.6 | 95.4 | 100.0 |
| **2003** | 0.3 | 6.5 | 12.1 | 11.7 | 64.3 | 5.2 | 6.8 | 93.2 | 100.0 |
| **2004** | 0.3 | 4.5 | 10.4 | 33.9 | 46.4 | 4.6 | 4.8 | 95.2 | 100.0 |
| **2005** | 0.4 | 3.9 | 6.1 | 49.3 | 35.7 | 4.5 | 4.3 | 95.7 | 100.0 |

**Table 5: Sum of Members (Active, Retired and Other) (000's)**

| | GC Funding Ratio | | | | | | GC Funding Ratio | | All |
|---|---|---|---|---|---|---|---|---|---|
| | < 60% | 60-80% | 80-90% | 90-100% | 100-120% | 120% + | < 80% | 80% + | |
| **Year** | | | | | | | | | |
| **2000** | 5 | 11 | 94 | 213 | 1,595 | 340 | 16 | 2,242 | 2,258 |
| **2001** | 8 | 17 | 161 | 252 | 1,656 | 326 | 26 | 2,394 | 2,420 |
| **2002** | 11 | 125 | 241 | 278 | 1,605 | 248 | 135 | 2,371 | 2,507 |
| **2003** | 9 | 184 | 354 | 290 | 1,551 | 151 | 194 | 2,346 | 2,540 |
| **2004** | 10 | 135 | 311 | 812 | 1,195 | 134 | 146 | 2,452 | 2,598 |
| **2005** | 11 | 118 | 189 | 1,177 | 975 | 135 | 129 | 2,476 | 2,604 |

Tables 5 and 6 show the number and percent of all members (including retired and others, deferred vested members) of pension plans by going concern funded ratio. They show a small rise in the proportion in under-funded plans and then a decrease in that proportion in 2004-2005.

**Table 6: Percent of Members (Active, Retired and Other) (000's)**

| | GC Funding Ratio | | | | | | GC Funding Ratio | | All |
|---|---|---|---|---|---|---|---|---|---|
| | < 60% | 60-80% | 80-90% | 90-100% | 100-120% | 120% + | < 80% | 80% + | |
| **Year** | | | | | | | | | |
| **2000** | 0.2 | 0.5 | 4.2 | 9.4 | 70.7 | 15.1 | 0.7 | 99.3 | 100.0 |
| **2001** | 0.3 | 0.7 | 6.6 | 10.4 | 68.4 | 13.5 | 1.1 | 98.9 | 100.0 |
| **2002** | 0.4 | 5.0 | 9.6 | 11.1 | 64.0 | 9.9 | 5.4 | 94.6 | 100.0 |
| **2003** | 0.4 | 7.3 | 13.9 | 11.4 | 61.1 | 6.0 | 7.6 | 92.4 | 100.0 |
| **2004** | 0.4 | 5.2 | 12.0 | 31.2 | 46.0 | 5.2 | 5.6 | 94.4 | 100.0 |
| **2005** | 0.4 | 4.5 | 7.3 | 45.2 | 37.4 | 5.2 | 4.9 | 95.1 | 100.0 |

**Table 7: Sum of Going Concern Assets ($B)**

| | GC Funding Ratio | | | | | | GC Funding Ratio | | All |
|---|---|---|---|---|---|---|---|---|---|
| | < 60% | 60-80% | 80-90% | 90-100% | 100-120% | 120% + | < 80% | 80% + | |
| **Year** | | | | | | | | | |
| **2000** | 0 | 0 | 3 | 12 | 195 | 25 | 0 | 236 | 237 |
| **2001** | 0 | 0 | 7 | 22 | 205 | 25 | 0 | 258 | 259 |
| **2002** | 0 | 5 | 16 | 20 | 209 | 20 | 5 | 265 | 270 |
| **2003** | 0 | 17 | 21 | 23 | 196 | 13 | 17 | 253 | 271 |
| **2004** | 0 | 5 | 24 | 90 | 183 | 12 | 5 | 309 | 314 |
| **2005** | 0 | 4 | 17 | 132 | 157 | 12 | 4 | 318 | 322 |

Tables 7 and 8 show how important under-funding is by size of plan assets. They show the amount and percent of assets as measured on a going concern basis by funded ratios on the same basis. Tables 7 and 8 show a small rise in the proportion of assets in under-funded plans to 2003 and then a decrease in that proportion in 2004-2005.

**Table 8: Percent of Going Concern Assets ($B)**

| | GC Funding Ratio | | | | | | GC Funding Ratio | | All |
|---|---|---|---|---|---|---|---|---|---|
| | < 60% | 60-80% | 80-90% | 90-100% | 100-120% | 120% + | < 80% | 80% + | |
| **Year** | | | | | | | | | |
| **2000** | 0.0 | 0.1 | 1.4 | 5.1 | 82.6 | 10.8 | 0.1 | 99.9 | 100.0 |
| **2001** | 0.0 | 0.2 | 2.6 | 8.4 | 79.2 | 9.7 | 0.2 | 99.8 | 100.0 |
| **2002** | 0.0 | 1.7 | 5.7 | 7.5 | 77.5 | 7.6 | 1.7 | 98.3 | 100.0 |
| **2003** | 0.0 | 6.4 | 7.7 | 8.6 | 72.5 | 4.7 | 6.4 | 93.6 | 100.0 |
| **2004** | 0.0 | 1.7 | 7.8 | 28.7 | 58.2 | 3.7 | 1.7 | 98.3 | 100.0 |
| **2005** | 0.0 | 1.2 | 5.3 | 41.0 | 48.9 | 3.6 | 1.2 | 98.8 | 100.0 |

## 6.2 Series 2, Members and Assets by Solvency Funding Ratios

Series 2 measures members and assets on a "solvency basis". This is the basis used to calculate assets and liabilities assuming the plan were to cease operating (wind-up). In some respects, these assumptions tend to be more conservative than those used in the going concern basis for estimating assets and liabilities. This is also the basis used for determining any "special payments" required to amortize an unfunded liability in the pension plan.

Table 9, below, shows the number of plans by solvency funding ratio in each year. It shows an increasing number of under-funded plans on a solvency basis to 2003, and then a slight decline in the number of under-funded plans 2004/2005. There is a discrepancy between the number of plans on a going concern basis and on a solvency basis over each year. The total difference is 141 filings, but a difference of only 8 in 2004 and 6 in 2005. Most of this discrepancy is with plan filings that include a going concern liability figure, but report a solvency liability of "zero". A significant number of these filings are for fairly small plans. Overall, this discrepancy does not affect total plan membership or assets.

[This space intentionally left blank. Figures continue on next page.]

**Table 9: Number of Plans**

| | Solvency Funding Ratio | | | | | | Solvency Funding Ratio | | All |
|---|---|---|---|---|---|---|---|---|---|
| | < 60% | 60-80% | 80-90% | 90-100% | 100-120% | 120% + | < 80% | 80% + | |
| **Year** | | | | | | | | | |
| **2000** | 27 | 114 | 190 | 242 | 424 | 455 | 141 | 1,311 | 1,452 |
| **2001** | 27 | 152 | 211 | 286 | 440 | 453 | 179 | 1,390 | 1,569 |
| **2002** | 49 | 369 | 235 | 269 | 374 | 354 | 418 | 1,232 | 1,650 |
| **2003** | 43 | 455 | 373 | 272 | 298 | 239 | 498 | 1,182 | 1,680 |
| **2004** | 33 | 385 | 489 | 294 | 273 | 221 | 418 | 1,277 | 1,695 |
| **2005** | 43 | 433 | 467 | 317 | 252 | 194 | 476 | 1,230 | 1,706 |

**Table 10: Percent of Plans**

| | Solvency Funding Ratio | | | | | | Solvency Funding Ratio | | All |
|---|---|---|---|---|---|---|---|---|---|
| | < 60% | 60-80% | 80-90% | 90-100% | 100-120% | 120% + | < 80% | 80% + | |
| **Year** | | | | | | | | | |
| **2000** | 2 | 8 | 13 | 17 | 29 | 31 | 10 | 90 | 1,452 |
| **2001** | 2 | 10 | 13 | 18 | 28 | 29 | 11 | 89 | 1,569 |
| **2002** | 3 | 22 | 14 | 16 | 23 | 21 | 25 | 75 | 1,650 |
| **2003** | 3 | 27 | 22 | 16 | 18 | 14 | 30 | 70 | 1,680 |
| **2004** | 2 | 22 | 29 | 17 | 16 | 13 | 25 | 75 | 1,695 |
| **2005** | 3 | 25 | 27 | 19 | 15 | 11 | 38 | 72 | 1,706 |

*Note 1; Tabulation year is the year of the date on the AIS return*
*Note 2; Actuarial Information Returns (AIS) as of June 2007*

**Table 11: Sum of Active Members (000's)**

| | Solvency Funding Ratio | | | | | | Solvency Funding Ratio | | |
|---|---|---|---|---|---|---|---|---|---|
| | < 60% | 60-80% | 80-90% | 90-100% | 100-120% | 120% + | < 80% | 80% + | All |
| **Year** | | | | | | | | | |
| **2000** | 8 | 73 | 62 | 138 | 765 | 173 | 81 | 1,138 | 1,219 |
| **2001** | 7 | 102 | 91 | 169 | 521 | 406 | 109 | 1,187 | 1,296 |
| **2002** | 42 | 155 | 81 | 358 | 370 | 350 | 196 | 1,160 | 1,356 |
| **2003** | 38 | 188 | 117 | 325 | 570 | 117 | 226 | 1,130 | 1,356 |
| **2004** | 44 | 146 | 164 | 195 | 559 | 263 | 190 | 1,181 | 1,371 |
| **2005** | 53 | 176 | 126 | 198 | 557 | 258 | 228 | 1,139 | 1,367 |

Tables 11 and 12 show the number and percent of active members by funded ratio on a solvency basis. They show an overall increase in the number of active members in under-funded plans to 2003, and slight decreases by 2005.

**Table 12: Percent of Active Members (000's)**

| | Solvency Funding Ratio | | | | | | Solvency Funding Ratio | | |
|---|---|---|---|---|---|---|---|---|---|
| | < 60% | 60-80% | 80-90% | 90-100% | 100-120% | 120% + | < 80% | 80% + | All |
| **Year** | | | | | | | | | |
| **2000** | 0.6 | 6.0 | 5.1 | 11.3 | 62.7 | 14.2 | 6.6 | 93.4 | 100.0 |
| **2001** | 0.5 | 7.9 | 7.0 | 13.0 | 40.2 | 31.3 | 8.4 | 91.6 | 100.0 |
| **2002** | 3.1 | 11.4 | 6.0 | 26.4 | 27.3 | 25.8 | 14.5 | 85.5 | 100.0 |
| **2003** | 2.8 | 13.9 | 8.7 | 24.0 | 42.0 | 8.7 | 16.7 | 83.3 | 100.0 |
| **2004** | 3.2 | 10.7 | 12.0 | 14.2 | 40.8 | 19.2 | 13.9 | 86.1 | 100.0 |
| **2005** | 3.9 | 12.8 | 9.2 | 14.5 | 40.7 | 18.9 | 16.7 | 83.3 | 100.0 |

**Table 13: Sum of Members (Active, Retired and Other) (000's)**

| | Solvency Funding Ratio | | | | | | Solvency Funding Ratio | | All |
|---|---|---|---|---|---|---|---|---|---|
| | < 60% | 60-80% | 80-90% | 90-100% | 100-120% | 120% + | < 80% | 80% + | |
| **Year** | | | | | | | | | |
| **2000** | 10 | 144 | 103 | 264 | 1,394 | 299 | 154 | 2,061 | 2,215 |
| **2001** | 15 | 196 | 175 | 325 | 998 | 669 | 211 | 2,167 | 2,378 |
| **2002** | 96 | 320 | 135 | 725 | 647 | 579 | 416 | 2,085 | 2,501 |
| **2003** | 90 | 407 | 224 | 645 | 961 | 211 | 497 | 2,041 | 2,538 |
| **2004** | 96 | 323 | 329 | 365 | 947 | 535 | 420 | 2,176 | 2,595 |
| **2005** | 112 | 363 | 268 | 384 | 948 | 528 | 475 | 2,127 | 2,602 |

Tables 13 and 14 show the number and percent of all members (including retirees and others) by funded ratio on a solvency basis. They show an overall increase in the number of members in under-funded plans over time, but a slight decrease of all members in under-funded plans by 2004-2005.

**Table 14: Percent of Members (Active, Retired and Other) (000's)**

| | Solvency Funding Ratio | | | | | | Solvency Funding Ratio | | All |
|---|---|---|---|---|---|---|---|---|---|
| | < 60% | 60-80% | 80-90% | 90-100% | 100-120% | 120% + | < 80% | 80% + | |
| **Year** | | | | | | | | | |
| **2000** | 0.4 | 6.5 | 4.7 | 11.9 | 62.9 | 13.5 | 7.0 | 93.0 | 100.0 |
| **2001** | 0.6 | 8.2 | 7.4 | 13.7 | 42.0 | 28.1 | 8.9 | 91.1 | 100.0 |
| **2002** | 3.8 | 12.8 | 5.4 | 29.0 | 25.9 | 23.1 | 16.6 | 83.4 | 100.0 |
| **2003** | 3.6 | 16.0 | 8.8 | 25.4 | 37.9 | 8.3 | 19.6 | 80.4 | 100.0 |
| **2004** | 3.7 | 12.5 | 12.7 | 14.1 | 36.5 | 20.6 | 16.2 | 83.8 | 100.0 |
| **2005** | 4.3 | 13.9 | 10.3 | 14.7 | 36.4 | 20.3 | 18.2 | 81.8 | 100.0 |

**Table 15: Sum of Solvency Assets ($B)**

| | Solvency Funding Ratio | | | | | | Solvency Funding Ratio | | |
|---|---|---|---|---|---|---|---|---|---|
| | < 60% | 60-80% | 80-90% | 90-100% | 100-120% | 120% + | < 80% | 80% + | All |
| **Year** | | | | | | | | | |
| **2000** | 0 | 4 | 5 | 18 | 191 | 26 | 4 | 241 | 245 |
| **2001** | 0 | 7 | 14 | 22 | 137 | 68 | 7 | 241 | 249 |
| **2002** | 3 | 19 | 7 | 94 | 65 | 62 | 21 | 228 | 249 |
| **2003** | 2 | 27 | 13 | 88 | 97 | 23 | 30 | 221 | 251 |
| **2004** | 3 | 24 | 26 | 27 | 100 | 106 | 27 | 259 | 286 |
| **2005** | 3 | 30 | 22 | 32 | 107 | 106 | 33 | 267 | 300 |

Tables 15 and 16 show the assets and percent of assets of DB plans by funded ratio on a solvency basis. They show an overall increase in the amount of assets in under-funded plans over time. This shows the importance of the level of under-funding.

**Table 16: Percent of Solvency Assets ($B)**

| | Solvency Funding Ratio | | | | | | Solvency Funding Ratio | | |
|---|---|---|---|---|---|---|---|---|---|
| | < 60% | 60-80% | 80-90% | 90-100% | 100-120% | 120% + | < 80% | 80% + | All |
| **Year** | | | | | | | | | |
| **2000** | 0.1 | 1.6 | 2.1 | 7.4 | 78.0 | 10.8 | 1.7 | 98.3 | 100.0 |
| **2001** | 0.1 | 2.9 | 5.8 | 8.8 | 55.2 | 27.3 | 3.0 | 97.0 | 100.0 |
| **2002** | 1.0 | 7.5 | 2.6 | 37.8 | 26.2 | 24.8 | 8.5 | 91.5 | 100.0 |
| **2003** | 1.0 | 10.9 | 5.3 | 34.9 | 38.8 | 9.1 | 11.9 | 88.1 | 100.0 |
| **2004** | 0.9 | 8.3 | 9.2 | 9.4 | 35.1 | 37.0 | 9.3 | 90.7 | 100.0 |
| **2005** | 1.1 | 10.0 | 7.4 | 10.5 | 35.7 | 35.3 | 11.0 | 89.0 | 100.0 |

### 6.3 Series 3, Change in Going Concern Funding Ratio from Previous Valuation

The basis for Series 3 is the change in going concern funding ratio of the same plan and the number of years between the valuations filed reporting that funding ratio.

Table 17 below shows the number of valuations summed over the 5 year period. The majority of valuations filed were filed one or three years after the prior valuation, as would be expected and is required by regulation. Within the group that filed one year after the prior evaluation, most showed an improvement of the funded ratio by up to 10% or decrease in funded ratio by up to 10%. Within the group filing after three years, more than two-thirds showed a decrease in funded ratio, and nearly one-third showed a decrease of more than 20%.

Overall, this series shows that in the years 2000-2005, when there was a new filing, it tended to show a decrease in funded ratio, and a corresponding increase in members and assets in under-funded plans. 2,361 plans (55%) showed a decrease in funded status versus 1,960 (45%) showing an improvement in funded status.

**Table 17: Number of Valuations**

| | Change in GC Ratio between Valuations | | | | | | |
|---|---|---|---|---|---|---|---|
| | <-20% | -20-10% | -10-0% | 0-10% | 10-20% | 20% + | All |
| **Years between valuations** | | | | | | | |
| **0** | 2 | . | 10 | 16 | 7 | . | 35 |
| **1** | 50 | 123 | 631 | 898 | 335 | 95 | 2,132 |
| **2** | 116 | 90 | 124 | 114 | 23 | 28 | 495 |
| **3** | 544 | 313 | 355 | 219 | 123 | 98 | 1,652 |
| **4+** | 2 | 1 | . | 2 | 1 | 1 | 7 |
| **All** | 714 | 527 | 1,120 | 1,249 | 489 | 222 | 4,321 |

**Table 18: Percent of Active Members (000's)**

| | Change in GC Ratio between Valuations | | | | | | All |
|---|---|---|---|---|---|---|---|
| | <-20% | -20-10% | -10-0% | 0-10% | 10-20% | 20% + | |
| **Years between valuations** | | | | | | | |
| **0** | 1.0 | . | 54.4 | 34.4 | 10.3 | . | 100.0 |
| **1** | 0.6 | 4.2 | 62.4 | 27.3 | 4.8 | 0.6 | 100.0 |
| **2** | 9.8 | 31.8 | 48.2 | 9.2 | 0.4 | 0.7 | 100.0 |
| **3** | 17.7 | 20.1 | 47.3 | 8.5 | 4.3 | 2.2 | 100.0 |
| **4+** | 22.7 | 5.8 | . | 70.8 | 0.7 | 0.0 | 100.0 |
| **All** | 4.4 | 10.9 | 58.0 | 21.8 | 4.1 | 0.8 | 100.0 |

Tables 18 and 19 show that about 73.3% of active members (70.8% of all members) were in a plan that showed a decrease in funded status, and 26.7% of active members (29.2% of all members) in a plan that showed an increase in funded status during the period.

**Table 19: Percent of Members (Active, Retired and Other) (000's)**

| | Change in GC Ratio between Valuations | | | | | | All |
|---|---|---|---|---|---|---|---|
| | <-20% | -20-10% | -10-0% | 0-10% | 10-20% | 20% + | |
| **Years between valuations** | | | | | | | |
| **0** | 0.5 | . | 49.8 | 40.4 | 9.2 | . | 100.0 |
| **1** | 0.5 | 4.4 | 59.3 | 29.9 | 5.1 | 0.7 | 100.0 |
| **2** | 8.6 | 29.1 | 50.3 | 10.1 | 0.6 | 1.2 | 100.0 |
| **3** | 17.9 | 19.6 | 47.3 | 8.7 | 3.8 | 2.5 | 100.0 |
| **4+** | 9.0 | 2.5 | . | 85.4 | 0.5 | 2.6 | 100.0 |
| **All** | 4.2 | 10.5 | 56.1 | 24.0 | 4.2 | 1.0 | 100.0 |

**Table 20: Percent of Going Concern Assets ($B)**

| | Change in GC Ratio between Valuations | | | | | | |
|---|---|---|---|---|---|---|---|
| | <-20% | -20-10% | -10-0% | 0-10% | 10-20% | 20% + | All |
| **Years between valuations** | | | | | | | |
| **0** | 0.3 | . | 46.6 | 47.8 | 5.3 | . | 100.0 |
| **1** | 0.4 | 3.6 | 63.9 | 27.0 | 4.7 | 0.4 | 100.0 |
| **2** | 5.9 | 20.1 | 67.3 | 5.6 | 0.3 | 0.8 | 100.0 |
| **3** | 11.3 | 19.3 | 59.5 | 5.7 | 2.4 | 1.8 | 100.0 |
| **4+** | 2.3 | 1.7 | . | 95.3 | 0.1 | 0.7 | 100.0 |
| **All** | 2.7 | 8.8 | 64.0 | 20.3 | 3.5 | 0.6 | 100.0 |

Correspondingly, Table 20 shows that 75.5% of assets were in plans that showed a decrease in funded status, and 24.4% of assets were in plans that showed an increase in funded status.

## 6.4 Series 4, Change in Solvency Funding Ratio from Previous Valuation

The basis for Series 4 is the change in solvency funding ratio of the same plan and the number of years between the valuations filed reporting that funding ratio. Again, there is a discrepancy between the number of plans on a going concern basis and on a solvency basis over each year.

Overall, this series shows very similar pattern to the previous series, that is, in the years 2000-2005, when there was a new filing, it tended to show a decrease in funded ratio, and a corresponding increase in members and assets in under-funded plans.

Table 21 (next page) shows the number of valuations summed over the 5 year period. The majority of valuations filed were filed one or three years after the prior valuation, as would be expected and is required by regulation. Within the group that filed one year after the prior evaluation, most showed an improvement of the funded ratio by up to 10% or decrease in funded ratio by up to 10%. Within the group filing after three years, more than two-thirds showed a decrease in funded ratio, and nearly one-third showed a decrease of more than 20%. 2,517 filings showed a decrease in solvency funding, and 1,663 filings showed an improvement in solvency funding.

**Table 21: Number of Valuations**

| | Change in Sol. Ratio between Valuations | | | | | | |
|---|---|---|---|---|---|---|---|
| | **<-20%** | **-20-10%** | **-10-0%** | **0-10%** | **10-20%** | **20% +** | **All** |
| **Years between valuations** | | | | | | | |
| **0** | 1 | 1 | 14 | 14 | 3 | 2 | 35 |
| **1** | 49 | 174 | 670 | 987 | 180 | 61 | 2,121 |
| **2** | 140 | 98 | 100 | 77 | 31 | 18 | 464 |
| **3** | 645 | 332 | 289 | 178 | 52 | 57 | 1,553 |
| **4+** | 3 | 1 | . | 2 | . | 1 | 7 |
| **All** | 838 | 606 | 1,073 | 1,258 | 266 | 139 | 4,180 |

**Table 22: Percent of Active Members (000's)**

| | Change in Sol. Ratio between Valuations | | | | | | All |
|---|---|---|---|---|---|---|---|
| | <-20% | -20-10% | -10-0% | 0-10% | 10-20% | 20% + | |
| **Years between valuations** | | | | | | | |
| **0** | 0.9 | 3.1 | 50.5 | 33.6 | 10.5 | 1.4 | 100.0 |
| **1** | 1.3 | 22.6 | 40.7 | 27.0 | 8.1 | 0.4 | 100.0 |
| **2** | 9.3 | 36.0 | 27.4 | 5.2 | 2.9 | 19.2 | 100.0 |
| **3** | 26.3 | 23.3 | 33.1 | 14.5 | 1.7 | 1.0 | 100.0 |
| **4+** | 60.7 | 20.3 | . | 19.1 | . | 0.0 | 100.0 |
| **All** | 5.8 | 24.8 | 37.5 | 21.7 | 6.4 | 3.7 | 100.0 |

Tables 22 and 23 show that 68.1% of active members (67.1% of all members) were in plans that showed a decrease in solvency funding and 31.8% active members (32.9% all members) were in plans that showed an improvement in solvency funding.

**Table 23: Percent of Members (Active, Retired and Other) (000's)**

| | Change in Sol. Ratio between Valuations | | | | | | All |
|---|---|---|---|---|---|---|---|
| | <-20% | -20-10% | -10-0% | 0-10% | 10-20% | 20% + | |
| **Years between valuations** | | | | | | | |
| **0** | 0.5 | 3.1 | 50.3 | 37.9 | 7.0 | 1.1 | 100.0 |
| **1** | 1.0 | 21.5 | 42.3 | 27.4 | 7.4 | 0.4 | 100.0 |
| **2** | 8.1 | 33.5 | 25.6 | 6.3 | 3.4 | 23.2 | 100.0 |
| **3** | 28.3 | 24.3 | 29.4 | 14.8 | 2.0 | 1.3 | 100.0 |
| **4+** | 36.5 | 8.0 | . | 52.9 | . | 2.6 | 100.0 |
| **All** | 5.6 | 23.6 | 37.9 | 22.4 | 6.1 | 4.4 | 100.0 |

Table 24 below shows that 66.7% of assets were in filings that showed a decrease in solvency funding, and 33.3% in plans that showed an increase.

**Table 24: Percent of Solvency Assets ($B)**

| | Change in Sol. Ratio between Valuations | | | | | | All |
|---|---|---|---|---|---|---|---|
| | <-20% | -20-10% | -10-0% | 0-10% | 10-20% | 20% + | |
| **Years between valuations** | | | | | | | |
| **0** | 0.3 | 1.1 | 46.8 | 46.9 | 4.2 | 0.7 | 100.0 |
| **1** | 0.9 | 25.0 | 44.7 | 22.4 | 6.8 | 0.3 | 100.0 |
| **2** | 3.7 | 24.8 | 20.3 | 3.7 | 5.0 | 42.4 | 100.0 |
| **3** | 21.0 | 27.8 | 27.5 | 21.7 | 1.3 | 0.7 | 100.0 |
| **4+** | 77.4 | 1.8 | . | 20.1 | . | 0.7 | 100.0 |
| **All** | 3.7 | 25.1 | 37.9 | 18.7 | 5.8 | 8.8 | 100.0 |

# 7 Comparison of Current to Previous Funding Ratios

## 7.1 Series 5, Comparison of Going Concern Funding Ratios

The basis for Series 5 is the going concern funding ratio. It compares current to past funded ratios for the same plans.

Table 25 shows the number of plans. It shows that about two thirds of plans (2,978) are 80% or better funded in their most recent valuation, and three-quarters (3,163) were 80% funded or better in the valuation prior to that.

**Table 25: Number of Valuations**

| | **Current GC Funding Ratio** | | | | **All** |
|---|---|---|---|---|---|
| | **< 60%** | **< 80%** | **80-90%** | **80% +** | |
| **Previous GC Funding Ratio** | 30 | 27 | 2 | 11 | 70 |
| **< 60%** | | | | | |
| **< 80%** | 7 | 182 | 164 | 76 | 429 |
| **80-90%** | 1 | 75 | 260 | 323 | 659 |
| **80% +** | 12 | 192 | 391 | 2,568 | 3,163 |
| **All** | 50 | 476 | 817 | 2,978 | 4,321 |

**Table 26: Percent of Active Members (000's)**

| | Current GC Funding Ratio | | | | |
|---|---|---|---|---|---|
| | **< 60%** | **< 80%** | **80-90%** | **80% +** | **All** |
| **Previous GC Funding Ratio** | | | | | |
| **< 60%** | 81.2 | 1.6 | 0.2 | 0.0 | 0.3 |
| **< 80%** | 8.5 | 29.5 | 14.0 | 1.3 | 4.0 |
| **80-90%** | 0.0 | 32.5 | 53.0 | 3.4 | 9.9 |
| **80% +** | 10.4 | 36.3 | 32.8 | 95.3 | 85.8 |
| **All** | 0.2 | 5.0 | 10.3 | 84.6 | 100.0 |

Tables 26 and 27 show that membership in plans that were severely under-funded remain in plans that are severely under-funded (about 30 plans), and members in better-funded plans remain in better-funded plans (about 2500 plans).

**Table 27: Percent of Members (Active, Retired and Other) (000's)**

| | Current GC Funding Ratio | | | | |
|---|---|---|---|---|---|
| | **< 60%** | **< 80%** | **80-90%** | **80% +** | **All** |
| **Previous GC Funding Ratio** | | | | | |
| **< 60%** | 90.8 | 1.1 | 0.1 | 0.0 | 0.4 |
| **< 80%** | 3.3 | 32.3 | 14.0 | 1.3 | 4.7 |
| **80-90%** | 0.2 | 34.8 | 55.0 | 3.8 | 11.8 |
| **80% +** | 5.6 | 31.8 | 30.9 | 94.8 | 83.1 |
| **All** | 0.4 | 5.7 | 12.2 | 81.8 | 100.0 |

**Table 28: Percent of Going Concern Assets ($B)**

| | Current GC Funding Ratio | | | | |
|---|---|---|---|---|---|
| | **< 60%** | **< 80%** | **80-90%** | **80% +** | **All** |
| **Previous GC Funding Ratio** | | | | | |
| **< 60%** | 69.5 | 0.2 | 0.0 | 0.0 | 0.0 |
| **< 80%** | 9.5 | 27.1 | 12.3 | 1.5 | 3.0 |
| **80-90%** | 0.2 | 22.5 | 56.3 | 2.0 | 6.4 |
| **80% +** | 20.9 | 50.2 | 31.4 | 96.5 | 90.6 |
| **All** | 0.0 | 2.9 | 7.1 | 90.0 | 100.0 |

## 7.2 Series 6, Comparison of Current to Previous Solvency Funding Ratios

The basis for Series 6 is the solvency funding ratio. It compares current to past funded ratios for the same plans.

Table 29 shows the number of plans. It shows that over one third of plans (1,588) are 80% or better funded in their most recent valuation, and half (2,103) were 80% funded or better in the valuation prior to that.

**Table 29: Number of Valuations**

| | Current Sol. Funding Ratio | | | | |
|---|---|---|---|---|---|
| | **< 60%** | **< 80%** | **80-90%** | **80% +** | **All** |
| **Previous Sol. Funding Ratio** | | | | | |
| **< 60%** | 81 | 68 | 9 | 8 | 166 |
| **< 80%** | 39 | 879 | 268 | 42 | 1,228 |
| **80-90%** | 10 | 260 | 287 | 126 | 683 |
| **80% +** | 29 | 302 | 360 | 1,412 | 2,103 |
| **All** | 159 | 1,509 | 924 | 1,588 | 4,180 |

**Table 30: Percent of Active Members (000's)**

| | Current Sol. Funding Ratio | | | | |
|---|---|---|---|---|---|
| | **< 60%** | **< 80%** | **80-90%** | **80% +** | **All** |
| **Previous Sol. Funding Ratio** | | | | | |
| **< 60%** | 71.3 | 1.5 | 0.3 | 0.0 | 2.8 |
| **< 80%** | 24.6 | 64.8 | 17.7 | 0.3 | 12.7 |
| **80-90%** | 0.6 | 20.6 | 39.9 | 2.0 | 8.4 |
| **80% +** | 3.5 | 13.1 | 42.1 | 97.6 | 76.1 |
| **All** | 3.5 | 15.3 | 9.4 | 71.8 | 100.0 |

Tables 30 and 31 show that membership in plans that were severely under-funded remain in plans that are severely under-funded (about 81 plans), and members in better-funded plans remain in better-funded plans (about 1,412 plans).

**Table 31: Percent of Members (Active, Retired and Other) (000's)**

| | Current Sol. Funding Ratio | | | | |
|---|---|---|---|---|---|
| | **< 60%** | **< 80%** | **80-90%** | **80% +** | **All** |
| **Previous Sol. Funding Ratio** | | | | | |
| **< 60%** | 73.3 | 1.3 | 0.2 | 0.0 | 3.3 |
| **< 80%** | 23.4 | 66.3 | 17.9 | 0.5 | 14.6 |
| **80-90%** | 0.5 | 18.8 | 41.6 | 2.3 | 9.1 |
| **80% +** | 2.8 | 13.6 | 40.4 | 97.1 | 73.0 |
| **All** | 4.2 | 17.2 | 10.2 | 68.4 | 100.0 |

**Table 32: Percent of Solvency Assets ($B)**

| | Current Sol. Funding Ratio | | | | |
|---|---|---|---|---|---|
| | **< 60%** | **< 80%** | **80-90%** | **80% +** | **All** |
| **Previous Sol. Funding Ratio** | | | | | |
| **< 60%** | 75.1 | 0.7 | 0.1 | 0.0 | 0.9 |
| **< 80%** | 20.9 | 64.2 | 19.1 | 0.4 | 8.7 |
| **80-90%** | 0.5 | 21.8 | 42.8 | 1.2 | 6.6 |
| **80% +** | 3.4 | 13.2 | 38.0 | 98.4 | 83.8 |
| **All** | 1.1 | 10.4 | 7.7 | 80.8 | 100.0 |

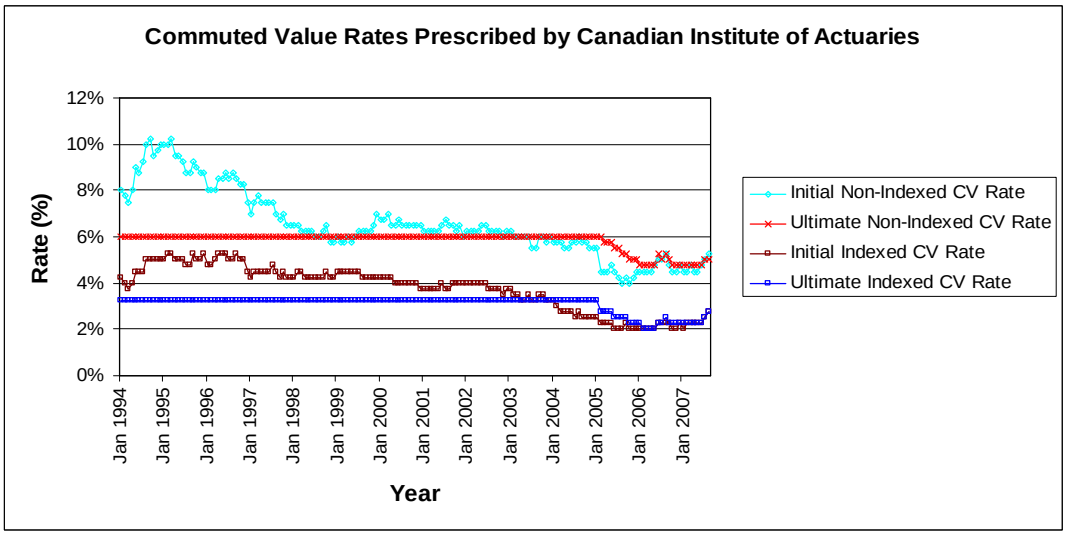
# 8 Examination of Key Assumptions

The data for section 7 are based on a different plan population than the data for sections 5 and 6. The data presented are based on defined benefit plan filings in each year, and not values for all plan in each year. Therefore, the number of plan filings in 2002 is different from 2003, and may not be the same plans filing in that year.

Figure 1 below places solvency interest rates in context. Unlike going concern interest rate assumptions, these are prescribed and there is little discretion in their use in AIS reports. The Canadian Institute of Actuaries prescribes commuted value rates for indexed and non-indexed benefits. By regulation, pension plans must use these prescribed rates for actuarial valuations on a solvency basis. As described above, before 2005, “initial rates” apply to the period 15 years after the valuation date, and “ultimate rates” thereafter. For 2005 and after, the initial rate period is reduced to 10 years, and ultimate rates apply thereafter. In addition, in 2005, the ultimate interest rate, which had previously been fixed at 6.0%, was changed to float in accordance with market rates. These rates are determined with reference to Government of Canada bond yields.

[This space intentionally left blank. Figure 1 appears on next page.]

**Figure 1: Initial and Ultimate Commuted Value Interest Rates**



## 8.1 Series 7, Ultimate Interest Rate by Funding Ratios

Table 33 shows the ultimate interest rate used by plans, by the size of the plan's going concern liabilities for active members. Generally, lower interest rate assumptions are more conservative, and increase the size of current liabilities. Higher interest rate assumptions are more optimistic, and lower the size of current liabilities of the plan. The "ultimate interest rate" is an assumption about the future rate of interest used in calculating liabilities for the period 15 years or more after the date of the actuarial valuation. In 2005, the period that the ultimate interest rate applies to is sooner, being 10 years after the valuation date. Table 33 shows a slowly decreasing median ultimate interest rate assumption between 2000 and 2005, from 7 to 6.5%.

**Table 33: Ultimate Interest Rate of GC Liabilities of Active Liabilities**

| | | Year | | | | | |
|---|---|---|---|---|---|---|---|
| | | **2000** | **2001** | **2002** | **2003** | **2004** | **2005** |
| **Ultimate rate for going concern active liabilities** | **Number with Missing Interest Rate** | 14 | 25 | 29 | 46 | 66 | 46 |
| | **Number of Actuarial Valuations** | 843 | 772 | 867 | 1,101 | 1,010 | 933 |
| | **10th Percentile** | 6.3% | 6.0% | 6.0% | 6.0% | 6.0% | 5.8% |
| | **25th Percentile** | 7.0% | 6.5% | 6.5% | 6.5% | 6.3% | 6.0% |
| | **Median** | 7.0% | 7.0% | 7.0% | 6.8% | 6.5% | 6.5% |
| | **75th Percentile** | 7.5% | 7.0% | 7.0% | 7.0% | 7.0% | 6.8% |
| | **90th Percentile** | 7.5% | 7.5% | 7.5% | 7.0% | 7.0% | 7.0% |

## 8.2 Series 8, Going Concern Assumptions by Funded Ratios

Series 8 shows the going concern ultimate interest rate assumption by funded ratio on a going concern and solvency basis, summed over the five year period.

Table 34 below shows that about two-thirds of the plans were 80% better funded on a solvency basis employed a 7% ultimate interest rate in going concern calculations, and about 70% of plans under-funded (less than 80% funded) on a solvency basis employed a 7% ultimate interest rate in going concern calculations, a rate about 1% higher than the fixed ultimate interest rate for calculations on a solvency basis (6%) during the same period. About 12% of plans employed a rate of 8% or higher.

**Table 34: Ratio of Solvency Assets to Liabilities**

| Funded Ratio (Sol.) | Ultimate Rate for GC Liabilities for Active Members | | | | | | | All |
|---|---|---|---|---|---|---|---|---|
| | 4% | 5% | 6% | 7% | 8% | 9% | n/a | |
| | Number of Valuations | Number of Valuations | Number of Valuations | Number of Valuations | Number of Valuations | Number of Valuations | Number of Valuations | Number of Valuations |
| >80% | 3 | 33 | 762 | 2,405 | 416 | 0 | 69 | 3,688 |
| <80% | 1 | 17 | 335 | 1,302 | 162 | 0 | 28 | 1,845 |
| Missing | 0 | 0 | 17 | 57 | 17 | 1 | 129 | 219 |
| All | 21 | 107 | 1112 | 3,708 | 707 | 1 | 316 | 5,752 |

Table 35 below shows that 67% of the plans 80% funded or better on a going concern basis employed a 7% ultimate interest rate, and about 60% of plans under-funded (less than 80% funded) on a going concern basis employed a 7% ultimate interest rate. About 10% of all plans employed a rate of 8% or greater.

**Table 35: Ratio of Going Concern Assets to Liabilities**

| Funded Ratio (GC) | Ultimate Rate for GC Liabilities of Active Members | | | | | | | All |
|---|---|---|---|---|---|---|---|---|
| | 4% | 5% | 6% | 7% | 8% | 9% | n/a | |
| | Number of Valuations | Number of Valuations | Number of Valuations | Number of Valuations | Number of Valuations | Number of Valuations | Number of Valuations | Number of Valuations |
| >80% | 3 | 35 | 912 | 3,348 | 562 | 1 | 87 | 4,948 |
| <80% | 1 | 15 | 193 | 385 | 29 | 0 | 11 | 634 |
| Missing | 0 | 0 | 9 | 31 | 2 | 0 | 128 | 170 |
| All | 4 | 50 | 1114 | 3,764 | 593 | 1 | 226 | 5,752 |

## 8.3 Series 9, Mortality Tables

Series 9 shows which mortality tables pension plans are using in their actuarial valuations. There are seven standard mortality tables that are measured in the FSCO data base, from oldest to newest they are: 71G, 83G, 83GW, 94GAR, 94GS, 94UP, and O(S). These acronyms are explained at the beginning of this report. Generally, the more recent the table, the longer the life-expectancy it reflects, and the more conservative the assumption is in valuing liabilities (e.g., it is assumed that members will live longer and continue to draw pensions).

Table 36 below shows the number of actuarial valuations in each year and which mortality table they employed. It shows that generally, 83G was replaced with 94UP as the main mortality table employed by DB plans

**Table 36: Number of Plans**

| Year | Mortality Tables | | | | | | | All |
|---|---|---|---|---|---|---|---|---|
| | 71G | 83G | 83GW | 94GAR | 94GS | 94UP | O(S) | |
| **2000** | 5 | 708 | 9 | 5 | 54 | 61 | 15 | 857 |
| **2001** | 3 | 543 | 10 | 7 | 119 | 97 | 7 | 786 |
| **2002** | 3 | 517 | 5 | 20 | 172 | 153 | 11 | 881 |
| **2003** | 2 | 474 | 6 | 21 | 223 | 375 | 16 | 1,117 |
| **2004** | 1 | 276 | . | 11 | 214 | 527 | 7 | 1,036 |
| **2005** | 1 | 59 | . | 8 | 129 | 744 | 8 | 949 |

Table 37 shows the percentage of active members associated with each plan's mortality table in each year. By 2005, over 85% of members covered by defined benefit plans were in plans using the 94UP or O(S) tables.

**Table 37: Percent of Active Members**

| | Mortality Tables | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **71G** | **83G** | **83GW** | **94GAR** | **94GS** | **94UP** | **O(S)** | **All** |
| **Year** | | | | | | | | |
| **2000** | 0.2 | 46.9 | 0.3 | 1.1 | 8.2 | 42.6 | 0.8 | 100.0 |
| **2001** | 0.2 | 31.0 | 0.1 | 1.1 | 11.6 | 42.3 | 13.7 | 100.0 |
| **2002** | 0.1 | 20.8 | 0.1 | 1.4 | 13.3 | 47.7 | 16.6 | 100.0 |
| **2003** | 0.1 | 12.3 | 0.4 | 0.9 | 11.4 | 59.2 | 15.7 | 100.0 |
| **2004** | 0.1 | 12.1 | . | 0.2 | 15.4 | 69.9 | 2.3 | 100.0 |
| **2005** | 0.0 | 5.2 | . | 0.2 | 9.1 | 66.6 | 18.8 | 100.0 |