FSRA
Financial Services Regulatory Authority of Ontario

Ontario

ARSF
Autorité ontarienne de réglementation des services financiers

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2019 Report on the Funding of Defined Benefit Pension Plans in Ontario

September 2020

Contents

1.0 Executive Summary

The Financial Services Regulatory Authority of Ontario (FSRA) is a self-funded regulatory agency that regulates Ontario registered pension plans in accordance with the Pension Benefits Act (PBA) and Regulation 909 or any other regulations under the PBA, as amended. FSRA's statutory objects as outlined under the Financial Services Regulatory Authority of Ontario Act, 2016 (FSRA Act) include:

- to promote good administration of pension plans
- to protect and safeguard the pension benefits and rights of pension plan beneficiaries

FSRA has prepared this report (2019 Report) to provide pension stakeholders with up-to-date funding, investment and actuarial information related to defined benefit (DB) pension plans in Ontario. Information in this report is based on the latest filed valuation reports for DB pension plans that have valuation dates between July 1, 2016 and June 30, 2019, and fund financial statements for the fiscal year ending between July 1, 2018 and June 30, 2019. Information is presented on an aggregate basis with no disclosure of plan-specific information.

1.1 Guiding Principles And Prudential Supervision Framework

FSRA's Pension Sector Guiding Principles sets out its expectations of the various stakeholders that participate in the pension sector and seven principles that will guide how it exercises its regulatory authority within the context of the sector's complex legal and regulatory framework. The sharing of relevant information about the pension plans registered in Ontario is an important activity that supports the principles of being risk-based, aware, adaptable, facilitative, effective and efficient, and collaborative and transparent.

The information contained in this report is used by FSRA, in conjunction with other available data and analysis, to conduct its supervisory activities in accordance with prudential supervision framework. This same information is being made available to all stakeholders to inform and aid them in establishing and maintaining good governance, administration, investment, funding and risk management practices.

The information and analysis presented herein are derived from key actuarial, financial and investment data collected through the Actuarial Information Summary (AIS) and the Investment Information Summary (IIS) filed with FSRA. They provide a reliable and comprehensive picture of the state of DB pension plans in Ontario and insights into existing practices and emerging trends. It can serve as a key source of information for the purposes of comparing and benchmarking the results of a pension plan against its peers.

1.2 Current Funding Regime

Significant changes took place in 2018 as Ontario ushered in a new pension funding regime for DB pension plans effective May 1, 2018. Key features of the funding framework include:

- Shortening the amortization period from 15 years to 10 years for funding a going-concern unfunded liability;
- Consolidating going-concern special payments into a single schedule when a new report is filed;
- Requiring the funding of a reserve, called a Provision for Adverse Deviations (PfAD), within the plan;
- Requiring funding on a solvency basis only if needed to improve the plan's funded status to 85% on a solvency basis; and
- Introducing funding rules for benefit improvements and restricting contribution holidays to improve benefit security.

These changes apply to valuation reports filed on or after May 1, 2018 with a valuation date on or after December 31, 2017. However, these changes do not apply to jointly sponsored pension plans that are listed in subsection 1.3.1(3) of Regulation 909 (Listed JSPPs) – these JSPPs remain exempted from solvency funding. In addition, these changes also do not apply to Specified Ontario Multi-Employer Pension Plans (SOMEPPs). Effective July 1, 2018, temporary funding relief previously granted for SOMEPPs was extended to the earlier of the first anniversary of the date on which section 81.0.2 of the PBA (Conversion to Target Benefits) comes into force and January 1, 2024. During this period, SOMEPPs are exempt from the requirement to fund on a solvency basis.

This funding reform substantially ends a series of temporary solvency funding relief measures that were introduced starting in 2009. The remaining solvency funding relief measures are generally of a transitional nature.

1.3 Key Findings

The 2019 Report's key findings summarized below are based on actual information from actuarial valuation reports filed with FSRA with valuation dates between July 1, 2016 and June 30, 2019. Therefore, except as otherwise noted, the summary statistics drawn from the three-year period do not have a common valuation date. However, FSRA does provide the estimated median going-concern and solvency funded ratios of all plans measured as at December 31, 2019 in the key findings below.

In addition to the plans described above, there are approximately 200 pension plans registered outside of Ontario that have Ontario beneficiaries – these plans do not file actuarial valuation reports with FSRA and are not included in the 2019 Report.

General Funded Status

1. There was a significant reduction of 134 single employer pension plans (SEPPs) compared to the 2018 Report on the Funding of Defined Benefit Pension Plans in Ontario (2018 Report), primarily as a result of windups and asset transfer transactions. The distribution of the 1,230 pension plans analyzed based on their most recently filed valuation report are as follows:

	July 1, 2016 - June 30, 2017	July 1, 2017 - June 30, 2018	July 1, 2018 - June 30, 2019	Total
Number of Plans	247	611	372	1,230
Percentage of Plans	20%	50%	30%	100%

2. Overall, compared to the 2018 Report, the funded position of the pension plans analyzed by FSRA deteriorated slightly on a going-concern basis and improved slightly on a solvency basis:

- the median funded ratio on a going-concern basis has decreased from 111% to 109%; and
- the median funded ratio on a solvency basis has increased from 94% to 95%

For the 2019 Report FSRA commenced projecting the estimated going-concern funded positions of plans to a common year-end date (please see Section 6). The estimated median going-concern funded ratio as at December 31, 2019 is 115%.

3. There was a decrease in the percentage of pension plans that were fully funded on a going-concern basis but an increase on a solvency basis at their last valuation date:

   - 77% of the plans were fully funded on a going-concern basis (versus 80% in the 2018 Report); and
   - 31% of the plans were fully funded on a solvency basis (versus 28% from the 2018 Report).

4. The average interest rate assumption used for going-concern valuations decreased from 5.02% to 4.93% over the four-year period from July 1, 2015 to June 30, 2019. However, 14% of the actuarial valuation reports included in our analysis with valuation dates between July 1, 2018 and June 30, 2019 used an interest rate equal to or greater than 6.00% and 39% used an interest rate equal to or greater than 5.50% (compared to 12% and 39% respectively for those reports with valuation dates between July 1, 2017 and June 30, 2018).

5. 759 plans have transitioned to the new 2018 funding regime. For the purposes of determining the PfAD, the number of plans identifying themselves as closed and open are 584 and 175 respectively. The median PfAD for all 759 plans is 9.9%.

6. Minimum required contributions for 2020 including employer normal cost contributions, member required contributions and special payments, are estimated to decrease by about 4% from the 2019 level ($17.4 billion compared to the estimated $18.1 billion for 2019). This consists of decreases of $387 million in employer normal costs, $104 million in member required contributions, and $172 million in special payments.

Solvency Funding

FSRA estimates the projected solvency ratio for all the pension plans from the dates of their latest filed reports to a common measurement date of December 31, 2019. The median projected solvency ratio is 98% as at December 31, 2019, compared to 94% as at December 31, 2018. Specifically,

- 45% of the plans had a projected solvency ratio greater than 100% (up from the projected 27% as at December 31, 2018);
- 41% of the plans had a projected solvency ratio between 85% and 100%; and

- 14% of the plans had a projected solvency ratio below 85% (down from the projected 19% as at December 31, 2018).

Statistics on the remaining transitional solvency funding relief measures include:

1. Of the 73 multi-employer pension plans (MEPPs) that contain a DB provision, 56 have elected to be treated as a SOMEPP. These 56 SOMEPPs represent 95% of the total plan membership covered by the 73 MEPPs.
2. Temporary solvency funding relief for pension plans in the public sector and broader public sector was first introduced in 2011 through O. Reg. 178/11 and subsequently amended and extended between 2013 and 2017. Based on the latest actuarial valuation reports included in this 2019 Report, there are still 20 pension plans in receipt of Stage 2 solvency funding relief under O. Reg. 178/11 and have yet to be transitioned to the new funding framework with their next filing. Conditions and restrictions on contribution holidays and benefit improvements under O. Reg. 178/11 continue to apply until stipulations prescribed thereunder are satisfied. At the time of this report, a number of these plans have been or in the process of transitioning from this funding relief by merging with other pension plans.
3. Temporary solvency funding relief for private sector pension plans was first made available in 2009 and was subsequently amended and extended in 2012, 2016 and 2017. Based on the latest actuarial valuation reports included in this 2019 Report, there are still 53 pension plans in receipt of solvency funding relief under sections 5.6.2 and 5.6.3 of Regulation 909 and have yet to be transitioned to the new funding framework with their next filing.

Fund Investment

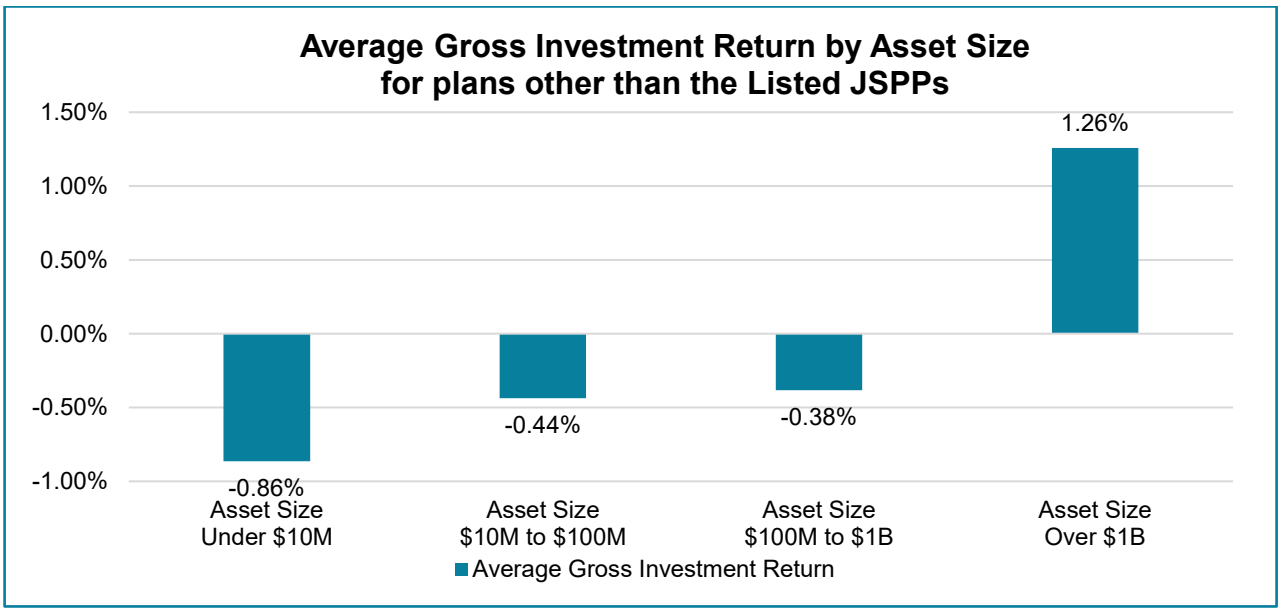
1. Historically, the typical asset allocation of pension funds between fixed income and non-fixed income changes very little from one year to the next. However, the data this year did reveal some larger than usual changes. SEPPs and MEPPs showed an increase in assets allocated to fixed income, while Listed JSPPs lowered their fixed income allocation. There was a shift away from equity across the board, with allocation percentages decreasing by 4%-6%. Much of this appears to have gone towards real estate, which increased for all types of plans. Finally, the allocation to alternative investments, which had been in a rising trend, saw modest reversals for SEPPs and MEPPs, while increasing significantly for the Listed JSPPs.

    a. Listed JSPPs have more allocation to cash and fixed income assets (average of 50% vs 47% for the SEPPs) and substantially less allocation to public equities (average of 13% vs 36% for the SEPPs)

b. MEPPs have significantly less allocation to cash and fixed income assets (average of 35%)

c. Listed JSPPs have significantly increased their allocation to alternative investments, from 20% in the 2018 Report to 27% in the 2019 Report

2. Larger plans generally have higher investment returns and lower investment fees than smaller plans. Average gross investment return for plans (other than the Listed JSPPs) that have assets of less than $10 million is -0.86% vs 1.26% for those with assets of over $1 billion.



3. The average gross returns, average investment and administrative fees for different types of pension plan are summarized as below:

	SEPP	MEPP	Listed JSPP
Average Gross Return	-0.48%	-0.73%	1.29%
Average Investment Fees	0.37%	0.44%	0.40%
Average Administrative Fees	0.60%	0.36%	0.16%
Average Total Fees	0.97%	0.80%	0.56%

2.0 Funding Data

This section provides an analysis and summary of the funding data, including actuarial assumptions and methods, for DB pension plans with valuation dates between July 1, 2016 and June 30, 2019. The data was compiled from the AIS and actuarial valuation reports that FSRA received on or before the data cutoff date of December 31, 2019.

Generally, valuation reports must be filed once every three years on both a going-concern and solvency basis. However, solvency concerns revealed in an actuarial valuation report require annual filing until those concerns are eliminated. Early filings may be required when events such as plan mergers or sales of businesses occur, and may also be done on a voluntary basis. Unless otherwise noted, the analysis in this 2019 Report is based on data from each plan's most recently filed actuarial valuation report in order to avoid double counting.[1]

For the purposes of this 2019 Report, the following plans are excluded in order to focus on the plans that are of most interest to our stakeholders and to ensure that the results of our analysis are not skewed:

- designated plans;
- individual pension plans; and
- plans that have been wound up or are in the process of winding up.

It should be noted that the 2019 Report includes seven large public sector plans (comprising of six Listed JSPPs and one single employer pension plan) that were included for the first time in the 2018 Report (i.e. excluded from DB Funding Reports for years before 2018).

Table 2.1 presents the profile of the 1,230 pension plans that have been included in the funding data analysis in this 2019 Report. Additional details on these plans are included in Section 8.0.

[1] The Trends Analysis in Section 4 uses data from reports with valuation dates in the different periods and therefore may include more than one valuation report from any given pension plan.

Table 2.1 - Summary of Plans Included

Plan/Benefit Type	# of Plans	Active Members	Retired Members	Other Participants	Total Membership	Market Value of Assets (in Millions)
Final Average	324	147,094	128,431	39,601	315,126	$89,310
Career Average	88	24,393	20,429	9,359	54,181	$8,817
Flat Benefit	143	20,705	20,594	9,793	51,092	$6,980
Hybrid	359	144,403	208,884	80,506	433,793	$84,200
Frozen DB & Hybrid	236	18,023	46,105	21,425	85,553	$13,965
MEPP	73	404,131	140,415	446,796	991,342	$35,835
Listed JSPP	7	779,342	469,349	158,744	1,407,435	$402,046
Total	1,230	1,538,091	1,034,207	766,224	3,338,522	$641,153
Average Age		48.3	71.9	50.3		

The total membership for MEPPs and JSPPs have increased by 2.4% and 2.5% respectively compared to the 2018 Report. In terms of the asset size, JSPPs has increased by 0.7% whereas MEPPs has decreased marginally by 0.3%. In contrast, the size of the SEPPs has shrunk – a reduction of 9.4% in total membership and 5.7% in market value of assets.

The average age of active members has increased from 44.5 to 48.3. This is likely attributable to the significant reduction in the number of SEPPs due to windups and mergers, as well as the closure of DB provisions for some ongoing plans.

2.1 Summary of Funding Data

Of the 1,230 plans that were analyzed, which together cover 3,338,522 plan members, 287 plans (23%) were less than fully funded on a going-concern basis. These 287 underfunded plans cover 1,515,481 (45%) of the total plan members.

On a solvency basis, 846 plans (69%) of the 1,230 plans were less than fully funded. These 846 plans cover 2,338,218 plan members (70% of total members).

Tables 2.2 and 2.3 show the distribution of underfunded plans by plan/benefit type and by membership.

Table 2.2 – Distribution of Underfunded Plans on a Going-Concern Basis by Plan Type and Membership

Plan/Benefit Type	By Plan			By Membership		
	Total Number of Plans	Number of Underfunded Plans	% of Total Plans	Total Number of Members	Number of Members in Underfunded Plans	% of Total Membership
Final Average	324	75	23%	315,126	144,070	46%
Career Average	88	26	30%	54,181	27,736	51%
Flat Benefit	143	18	13%	51,092	4,944	10%
Hybrid	359	85	24%	433,793	93,857	22%
Frozen DB & Hybrid	236	57	24%	85,553	28,086	33%
MEPP	73	23	32%	991,342	698,283	70%
Listed JSPP	7	3	43%	1,407,435	518,505	37%
Total	1,230	287	23%	3,338,522	1,515,481	45%

Table 2.3– Distribution of Underfunded Plans on a Solvency Basis by Plan Type and Membership

Plan/Benefit Type	By Plan			By Membership		
	Total Number of Plans	Number of Underfunded Plans	% of Total Plans	Total Number of Members	Number of Members in Underfunded Plans	% of Total Membership
Final Average	324	219	68%	315,126	245,256	78%
Career Average	88	71	81%	54,181	40,880	75%
Flat Benefit	143	103	72%	51,092	38,845	76%
Hybrid	359	255	71%	433,793	324,422	75%
Frozen DB & Hybrid	236	129	55%	85,553	62,333	73%
MEPP	73	64	88%	991,342	965,452	97%
Sub-Total	1,223	841	69%	1,931,087	1,677,188	87%
Listed JSPP	7	5	71%	1,407,435	661,030	47%
Total	1,230	846	69%	3,338,522	2,338,218	70%

Table 2.4 provides summary information grouped by plan maturity (as measured by the proportion of solvency liabilities relating to pensioners versus the plan's total solvency liabilities).

Table 2.4 – Funding Information Grouped By Maturity

Proportion of Solvency Liabilities relating to Pensioners	# of Plans	Total Membership	Solvency Assets (in Millions)	Solvency Liabilities (in Millions)	Solvency Ratio	Ratio of Active Members to Pensioners
Less than 25%	180	250,775	13,428	16,746	80%	4.4 : 1
25%≤ ratio <50%	511	1,085,547	82,826	101,304	82%	2.2 : 1
50%≤ ratio <75%	370	467,589	114,390	121,781	94%	0.7 : 1
75% and over	162	127,176	28,428	28,525	100%	0.1 : 1
Sub-Total	1,223	1,931,087	239,073	268,356	89%	1.3 : 1
Listed JSPP	7	1,407,435	401,503	363,700	110%	1.7 : 1
Total	1,230	3,338,522	640,576	632,056	101%	1.5 : 1

Tables 2.5 and 2.6 provide a more detailed breakdown of the going-concern and solvency funded ratios with respect to different types of DB pension plans. The median funded ratio was 109% on a going-concern basis and 95% on a solvency basis, for all plans that were analyzed. 54 of the 73 MEPPs (or 74%) had a solvency ratio of less than 85%.

Table 2.5 – Going-Concern Funded Ratio (GCR)

Ratio (GCR)	Final Average	Career Average	Flat Benefit	Hybrid	Frozen DB & Hybrid	MEPP	Listed JSPP	All Plans
GCR < 0.60	2	1	1	0	1	0	0	5
0.60 ≤ GCR < 0.80	1	0	2	7	6	1	0	17
0.80 ≤ GCR < 0.90	22	7	5	17	19	3	0	73
0.90 ≤ GCR < 1.00	50	18	10	61	31	19	3	192
1.00 ≤ GCR < 1.20	172	36	65	178	124	37	4	616
1.20 ≤ GCR	77	26	60	96	55	13	0	327
Total	324	88	143	359	236	73	7	1,230
Median Ratio	1.08	1.10	1.16	1.09	1.07	1.05	1.03	1.09

Table 2.6 – Solvency Funded Ratio (SR)

Ratio (SR)	Final Average	Career Average	Flat Benefit	Hybrid	Frozen DB & Hybrid	MEPP	Sub-Total	Listed JSPP	All Plans
SR < 0.60	2	1	2	0	1	16	22	0	22
0.60 ≤ SR < 0.80	20	11	8	10	6	31	86	2	88
0.80 ≤ SR < 0.85	13	5	3	18	5	7	51	1	52
0.85 ≤ SR < 0.90	69	20	34	65	31	2	221	1	222
0.90 ≤ SR < 1.00	115	34	56	162	86	8	461	1	462
1.00 ≤ SR < 1.20	84	14	34	87	82	7	308	1	309
1.20 ≤ SR	21	3	6	17	25	2	74	1	75
Total	324	88	143	359	236	73	1,223	7	1,230
Median Ratio	0.94	0.92	0.93	0.95	0.98	0.74	0.95	0.88	0.95

2.2 Summary of Actuarial Assumptions and Methods

The key actuarial assumptions and methods used in going-concern valuations are outlined below:

1. Almost all the plans used the unit credit cost method (with salary projections for plans with benefits based on final average earnings) to calculate going-concern liabilities.

Table 2.7 – Liability Valuation Method

Liability Valuation Method	# of Plans	% of Plans
Unit Credit (with salary projection)	767	62.4%
Unit Credit (with no salary projection)	457	37.1%
Entry Age Normal	1	0.1%
Aggregate	5	0.4%
Total	1,230	100.0%

2. Almost all plans used a market or market-related value of assets. However, although only 22.3% of plans use a smoothed market value method, they account for over 80% of the aggregate going-concern assets. Notably, all of the Listed JSPPs use smoothed assets, and they alone account for 62% of the aggregate going-concern assets.

Table 2.8 – Asset Valuation Method

Asset Valuation Method	# of Plans	% of Plans	% of Total Going-Concern Assets
Market	954	77.5%	18.8%
Smoothed Market	274	22.3%	81.0%
Other	2	0.2%	0.2%
Total	1,230	100.0%	100.0%

3. For going-concern valuations, almost all plans used mortality rates based on the Canadian Pensioners' Mortality tables (CPM-RPP2014) and improvement scales published in the Final Report, Canadian Pensioners' Mortality on February 13, 2014 by the Canadian Institute of Actuaries (2014 CIA CPM Study). The 2014 CIA CPM Study includes three new sets of mortality tables as well as two sets of improvement scales. The three mortality tables are:

- 2014 Mortality Table (CPM2014) – developed from the combined experience exhibited under the public and private sector plans;
- 2014 Public Sector Mortality Table (CPM2014Publ) – based on the separate experience exhibited under the public sector plans; and
- 2014 Private Sector Mortality Table (CPM2014Priv) – based on the separate experience exhibited under the private sector plans.

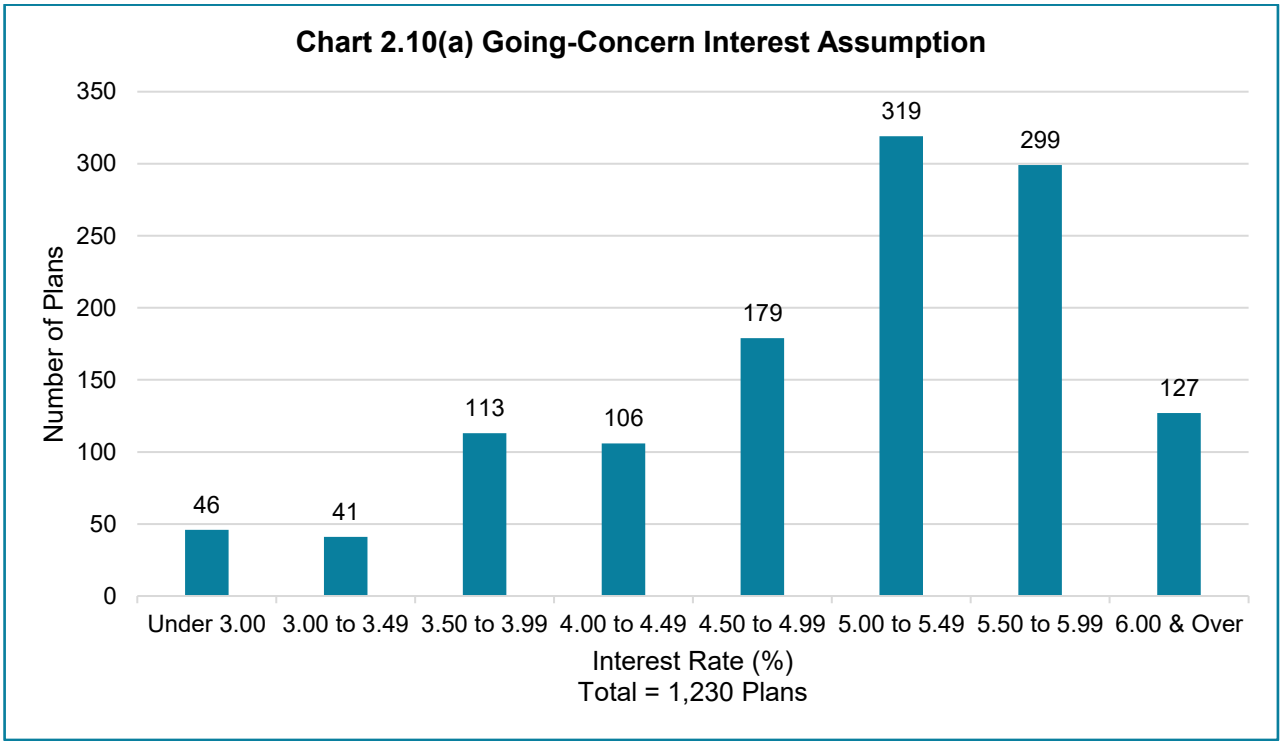
Table 2.9 – Mortality Assumption

Mortality Base Table	# of Plans	% of Plans	Adjustment		
			# of Plans		Median Adjustment
			Male Mortality	Female Mortality	
1994 UP	2	0.2%	0	0	n/a
CPM2014 Combined	123	10.0%	24	24	105%
CPM 2014 Public	102	8.3%	53	53	95%M,101%F
CPM 2014 Private	990	80.4%	326	325	105%
Other	6	0.5%	1	1	
Plan Specific	7	0.6%	1	1	
Total	1,230	100.0%			

4. Interest rate assumptions used to value the going-concern liabilities were generally flat relative prior years, with over 35% (versus 33% in the 2018 Report) of plans using a rate of 5.50% or higher.

   Chart 2.10(a) shows the distribution of going-concern interest rate assumptions used in the most recently filed valuation reports. Of the 127 plans that used an assumption of 6.00% or over, 75 plans used an interest rate of exactly 6.00%. Of the 319 plans that used a going-concern interest rate assumption in the range of 5.00% to 5.49%, 112 plans used an interest rate of exactly 5.00%.

Chart 2.10(b) shows the distribution of the going-concern interest rate assumptions for plans that filed a valuation under the old funding regime compared to those that filed a valuation under the 2018 funding regime. There is a clear shift in the proportion of plans using higher interest rate assumptions under the 2018 funding regime. FSRA will continue to monitor these developments to detect emerging trends in order to understand their implications on benefit security and pension risk management.



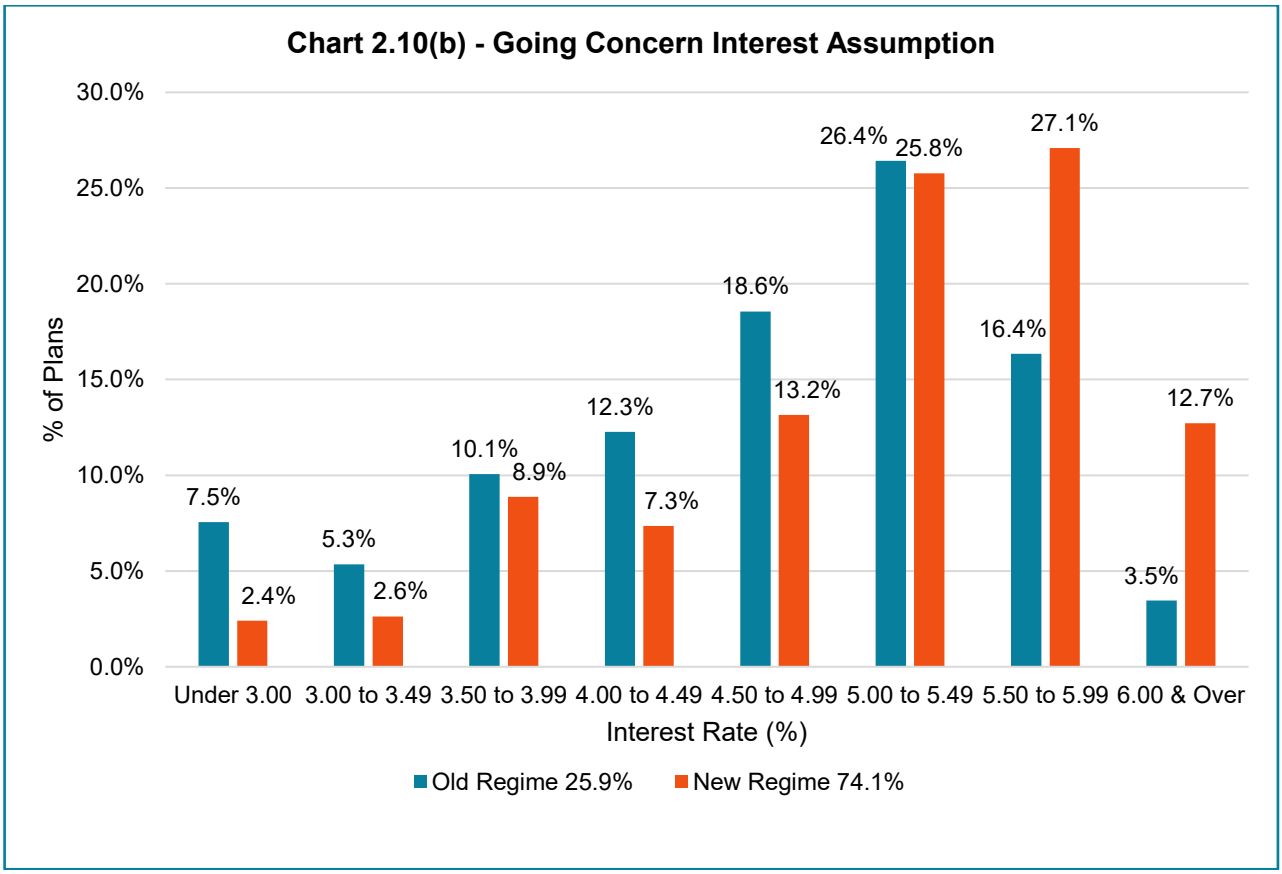
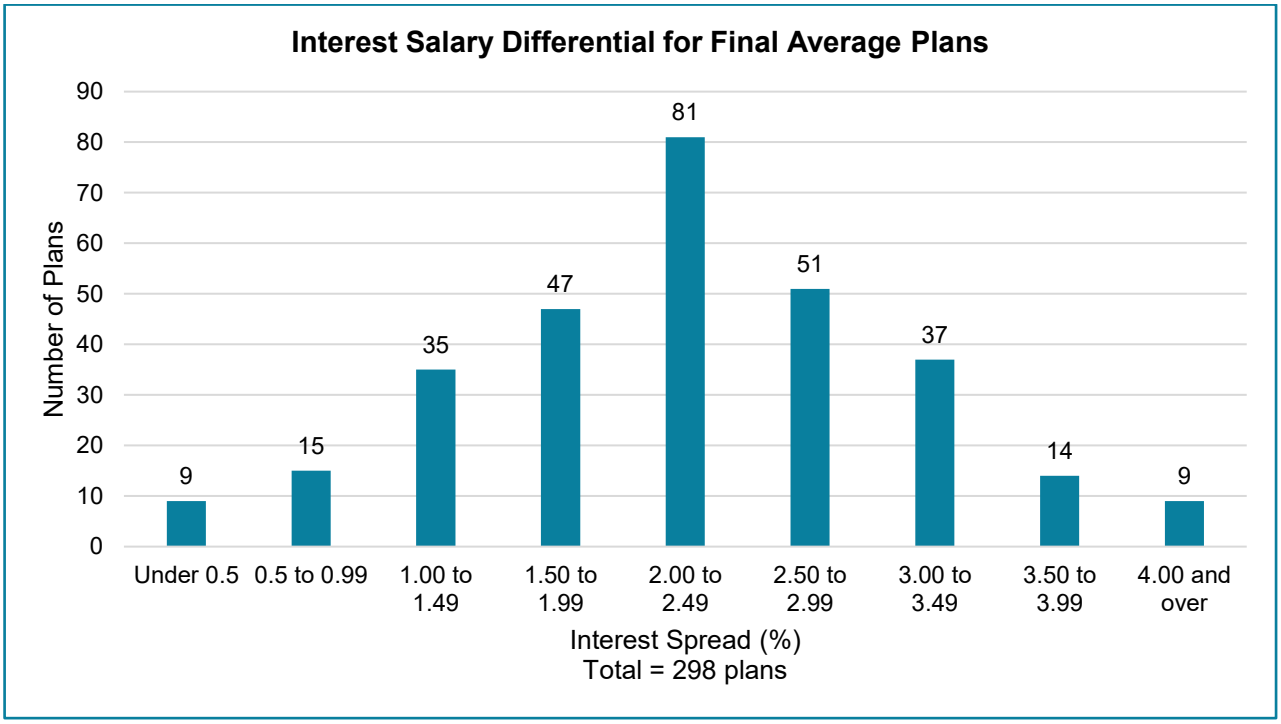


Chart 2.10(b) - Going Concern Interest Assumption
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
% of Plans
7.5%
2.4%
5.3%
2.6%
10.1%
8.9%
12.3%
7.3%
18.6%
13.2%
26.4%
25.8%
16.4%
27.1%
3.5%
12.7%
Under 3.00
3.00 to 3.49
3.50 to 3.99
4.00 to 4.49
4.50 to 4.99
5.00 to 5.49
5.50 to 5.99
6.00 & Over
Interest Rate (%)
Old Regime 25.9%
New Regime 74.1%

5. 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% inclusive. This accounts for 64% (including 13 plans that had an interest-salary differential of exactly 3.00% but were grouped as part of the 37 plans with a differential in the range of 3.00% to 3.49%) of all plans providing final average benefits. The average spread between the interest assumption and the salary increase assumption was 2.19%.

Chart 2.11 – Interest Salary Differential for Final Average Plans



6. Table 2.12 shows the provision for wind up expenses used in solvency valuations, grouped by plan membership size, including active members, former members and other plan beneficiaries.

   The expense allowance is also expressed as average dollar amounts per plan and per plan member. The average expense allowance per member generally decreases as plan membership size increases. The opposite pattern appears for plans with 10,000 or more members. Since there are only a small number of plans in the last two size categories (i.e., more than 10,000 members), greater caution should be exercised when interpreting the results for plans of this size.

The average per member wind up expense allowances are generally comparable to those reported in the 2018 Report.

Table 2.12 – Provision for Wind Up Expenses

Plan Membership	# of Plans	Total Membership	Wind Up Expenses		
			Total Wind Up Expenses	Average Per Plan	Average Per Member
<100	408	18,687	$27,293,420	$66,896	$1,461
100-499	437	102,294	65,783,240	150,534	643
500-999	149	103,061	43,224,600	290,098	419
1,000-4,999	167	353,570	102,768,800	615,382	291
5,000-9,999	36	261,702	51,009,000	1,416,917	195
10,000-49,999	25	475,567	179,342,000	7,173,680	377
50,000+	8	2,023,641	797,000,000	99,625,000	394
All Plans	1,230	3,338,522	$1,266,421,060	$1,029,611	$379

3.0 2018 Funding Regime For DB Plans

A new funding framework for most DB pension plans was implemented through O. Reg. 250/18. This was filed on April 20, 2018 to amend Regulation 909, with most provisions coming into force on May 1, 2018.

The funding provisions outlined within O. Reg. 250/18 apply to actuarial valuations filed after April 30, 2018 with a valuation date of December 31, 2017 or later. The new funding rules do not apply to Listed JSPPs. The changes also do not apply to SOMEPPs but do apply to MEPPs providing DB pensions that are not SOMEPPs.

This funding reform substantially ends a series of temporary solvency funding relief measures that were introduced starting in 2009. The remaining solvency funding relief measures are generally of a transitional nature.

3.1 New 2018 Funding Framework

O. Reg. 250/18 made substantial changes to both the going-concern and solvency funding rules

Going-concern Funding

Pension plans are required to establish and fund a Provision for Adverse Deviations (PfAD) on a going-concern basis.

Going-concern unfunded liabilities are amortized over a period not exceeding 10 years with special payments commencing up to one year after the valuation date. These going-concern special payments (with the exception of those related to benefit improvements and benefit credits prior to the effective date of the plans) are consolidated at each valuation date into a single payment schedule.

The PfAD is calculated as a percentage that is applied to the going-concern liabilities as well as the normal costs. However, liabilities and normal costs relating to escalated adjustments may be excluded for this purpose. The PfAD is established as the sum of three components:

1) Open/Closed Plan Component

   The first component depends on whether the plan meets the definition of a closed plan. According to subsection 11.2(1) of Regulation 909, a “closed plan” is defined as “a pension plan,

   (a) that has no members who are entitled to defined benefits, or

(b) in which at least 25 per cent of the members of the plan who are entitled to defined benefits are in a class or classes of employees from which new members are not permitted, according to the terms of the plan, to join the plan and accrue defined benefits"

A fixed component of 5.0% is applicable for closed plans and 4.0% is applicable for plans that are not closed plans.

2) Asset Mix Component

The second component depends on the plan's target asset allocation to fixed income assets and to non-fixed income assets. Regulation 909 sets out a minimum rating for target investment allocations of fixed income assets. The asset mix component of the PfAD ranges between 0% and 23% for closed plans and between 0% and 12% for plans that are not closed plans.

3) Benchmark Discount Rate (BDR) Component

The third component is a function of the plan's gross going-concern discount rate in relation to the benchmark discount rate (BDR) as defined in section 11.2 of Regulation 909. Our analysis indicates that only a small fraction of pension plans (2% or 15 plans) have a BDR component is not zero.

Table 3.0 – BDR Components

Type	# of Plans	Average BDR	Average Gross GC Rate	Average BDR Component
Open	2	6.56%	6.72%	1.70%
Closed	13	5.73%	5.92%	2.02%
Total	15	5.84%	6.03%	1.98%

Solvency Funding / Reduced Solvency Deficiency

Solvency funding is only required for plans that are less than 85% funded on a solvency basis.

Solvency deficiencies below the 85% threshold, defined in Regulation 909 as a "Reduced Solvency Deficiency" must be amortized over a period not exceeding 5 years with solvency special payments commencing up to one year after the valuation date.

The reduced solvency deficiency, as defined in section 1.3.2 of Regulation 909, is the amount by which "A" exceeds "B" where,

"A" is the sum of,

(a) 85 per cent of the pension plan's solvency liabilities,
(b) 85 per cent of the pension plan's solvency liability adjustment, and
(c) the pension plan's prior year credit balance as of the valuation date; and

"B" is the sum of the pension plan's solvency assets and the solvency asset adjustment as of the valuation date.

Available Actuarial Surplus

Under the funding regime, a plan sponsor cannot take a contribution holiday unless a cost certificate certifying that the plan has available actuarial surplus is filed with FSRA within 90 days of

the beginning of the plan fiscal year. Available actuarial surplus (for a plan for which special payments are not required or deferred), as defined in section 7.0.2 of Regulation 909, is the lesser of the following:

(a) The amount by which the value of the assets of the pension plan, determined on a going-concern basis, including accrued and receivable income but excluding the amount of any letter of credit held in trust for the pension plan, exceeds the sum of going-concern liabilities, the amount equal to the provision for adverse deviations in respect of going-concern liabilities and the prior year credit balance; and

(b) Whichever of the following amounts applies to the plan:

(i) In the case of a plan that is a public sector pension plan, the amount that, if it were deducted from the solvency assets of the pension plan, would reduce the solvency ratio to 1.05.

(ii) In the case of any other plan, the amount that, if it were deducted from the solvency assets of the pension plan, would reduce the transfer ratio to 1.05.

FSRA implemented a revised AIS in summer 2019 to capture new information with respect to the 2018 funding regime. The information in the new AIS will help inform FSRA, and all its stakeholders, about pension plans' application of, and compliance with, the current DB plan funding rules. Currently this information is not available electronically for all plans since most have not yet filed valuation reports using the revised AIS. FSRA will continue collecting the data as plans file using the new AIS and will include this analysis in future reports. In

anticipation of the changes under the 2018 funding regime, FSRA implemented a manual ad-hoc process to collect and analyze some of the new information, which is shown in Table 3.1 and 3.2 below. FSRA will continue to use this manual process for this data until all plans have filed using the revised AIS.

Of the pension plans included in the 2019 Report, 759 of them have filed a valuation report under the 2018 funding regime. Table 3.1 presents a profile of these pension plans and Table 3.2 summarizes the PfAD components.

Table 3.1 – Plans under 2018 Funding Regime

Type	# of Plans	Active	Retired	Other	Total Membership	Market Value of Assets	Going-Concern Liabilities	Average GC Ratio
						(in Millions)		
Open	175	139,316	114,172	43,318	296,806	$71,467	$68,555	112.5%
Closed	584	125,570	168,890	78,713	373,173	$69,342	$63,322	107.5%
Total	759	264,886	283,062	122,031	669,979	$140,809	$131,877	108.6%

Table 3.2 – PfAD Components

Type	# of Plans	Asset Mix Component		BDR Component			Median PfAD
		Median Fixed Income %	Median Asset Mix PfAD	Median BDR	Median Gross GC Rate	# Plans BDR>GC Rate	
Open	175	40.00%	4.0%	6.35%	5.50%	173	8.0%
Closed	584	45.00%	6.0%	6.13%	5.30%	571	11.0%
Total	759	45.00%	5.0%	6.19%	5.41%	744	9.9%

Not surprisingly, the PfAD components are virtually the same as the ones disclosed in the 2018 Report, since plans that were included last year would have no changes unless they filed a new valuation report.

3.2 Specified Ontario Multi-Employer Pension Plans (SOMEPPs)

In August 2007, a temporary funding framework applicable to SOMEPPs was implemented. A MEPP that meets the definition and satisfies the eligibility criteria described in Regulation 909 is eligible to elect SOMEPP status. Any MEPPs that do not meet the prescribed definition and eligibility criteria for SOMEPP status or chose not to elect that status are required to continue to fund on a solvency basis.

SOMEPPs are temporarily exempt from solvency funding; Contributions to these plans during the period covered by the valuation report must not be less than the sum of:

- the normal cost;
- the remaining special payments for any previously established going-concern unfunded liability; and
- the special payments for any new going-concern unfunded liability determined in the valuation report.

Any new going-concern unfunded liability must be liquidated over a period of 12 years. Furthermore, there are accelerated funding requirements for benefit improvements, requiring any increase in the going-concern unfunded liability as a result of the improvements to be liquidated over a period of eight years under prescribed conditions. There is no requirement to fund on a solvency basis during the period of temporary solvency funding relief, although solvency valuations are still required to be performed and their results must be set out in the valuation report.[2]

[2] More information on SOMEPPs is available at: http://www.fsco.gov.on.ca/en/pensions/actuarial/Pages/MEPPsolvency-qanda.aspx

Effective July 1, 2018, this temporary exemption for solvency funding was extended to the earlier of the first anniversary of the date on which section 81.0.2 of the PBA (Conversion to Target Benefits) comes into force and January 1, 2024.

The following tables provide selected statistics on the MEPPs that contain a DB provision. Of these 73 MEPPs, 56 of them (covering over 95% of the total DB MEPP membership) have elected to become SOMEPPs.

Table 3.3 – Membership Information

	Total (*Median*) Membership Count				
	# of Plans	Active Members	Retired Members	Other Participants	Total
SOMEPPs	56	387,630 *(1,056)*	125,572 *(648)*	431,429 *(1,053)*	944,631 *(3,198)*
Non-SOMEPPs	17	16,501 *(565)*	14,843 *(267)*	15,367 *(578)*	46,711 *(1,658)*
Total (All DB MEPPs)	73	404,131 *(929)*	140,415 *(589)*	446,796 *(874)*	991,342 *(2,684)*

Table 3.4 – Funding Information

	Total (*Median*) Value			
	Market Value of Assets	Solvency Assets‡	Solvency Liabilities	Solvency Ratio
	(in Millions)			
SOMEPPs	$31,107 *($181)*	$30,962 *($181)*	$49,187 *($261)*	69.9% *(68.0%)*
Non-SOMEPPs	$4,727 *($59)*	$4,718 *($59)*	$4,871 *($70)*	99.6% *(96.9%)*
Total (All DB MEPPs)	$35,834 *($161)*	$35,680 *($160)*	$54,058 *($214)*	76.8% *(74.4%)*

‡ Market value of assets less provision for wind up expenses

The plans that qualify as SOMEPPs tend to be significantly larger than non-SOMEPPs, when measured by the size of their assets, liabilities or plan membership. For example, the median solvency liabilities for SOMEPPs is almost four times that of the non-SOMEPPs.

In terms of funding levels, SOMEPPs are significantly less well funded than non-SOMEPPs. The median solvency ratio for SOMEPPs is 68% compared to almost 97% for non-SOMEPPs.

3.3 Solvency Funding Relief for Public Sector Pension Plans

In May 2011, O. Reg. 178/11 implemented changes that provide solvency funding relief to certain pension plans in the public sector and broader public sector. The relief measures were amended and extended between 2013 and 2017. Based on the latest actuarial valuation reports included in this 2019 Report, there are still 20 pension plans in receipt of Stage 2 solvency funding relief under O. Reg. 178/11 and have yet to be transitioned to the new funding framework with their next filing. Conditions and restrictions on contribution holidays and benefit improvements under O. Reg. 178/11 continue to apply until the prescribed stipulations are satisfied. Table 3.5 presents the profile of the 20 remaining plans based on their most current valuation report.

Table 3.5 – Plans still funding under O. Reg. 178/11

# of Plans	Active Members	Retired Members	Other Participants	Total Membership	Market Value of Assets	Going-Concern Liabilities	Solvency Liabilities
					(in Millions)		
20	81,048	61,458	20,883	163,389	$43,976	$45,293	$50,787

At the time of this report, a number of these plans have been or in the process of transitioning from this funding relief by merging with other pension plans.

3.4 Solvency Funding Relief for Private Sector Pension Plans

Temporary solvency funding relief for private sector pension plans was first made available in 2009 and was subsequently amended and extended in 2012, 2016 and 2017. The latest

rounds of extension were granted under O. Reg. 161/16 and O. Reg. 225/17; together, they provide the following relief options:

Option 6 - Consolidating existing special payments for solvency deficiencies into a new 5-year schedule;

Option 7 - Extending the period for liquidating a new solvency deficiency from a maximum of 5 years to a maximum of 10 years, subject to consent of the plan members; and

Option 8 - Deferring up to 24 months for the funding of special payments with respect to any new solvency deficiency.

Based on the latest actuarial valuation reports included in this 2019 Report, 281 plans have elected various combinations of the above solvency funding relief as prescribed under sections 5.6.2 and 5.6.3 of Regulation 909. Of those plans, 228 have transitioned over to the 2018 funding regime.

Table 3.6 – Distribution of 2016/2017 Solvency Relief Options Elected

Election	Number of Electing Plans	% of Options Elected	# Plans transitioning to new funding	# plans still on Solvency Relief
Option 6 only	34	12%	28	6
Option 7 only	8	3%	7	1
Option 8 only	137	49%	111	26
Option 6 & 7	5	2%	5	0
Option 6 & 8	97	34%	77	20
Total	281	100%	228	53

4.0 Trends Analysis

The following trends analysis incorporates data from all filed reports with valuation dates between July 1, 2015 and June 30, 2019 and therefore may include more than one valuation report from any given pension plan.

4.1 Solvency Funded Status

Table 4.1 shows a breakdown of plans by solvency ratios for the past four valuation periods from 2015 to 2018 (each valuation period begins on July 1st)[3]. The majority of plans have a valuation date of either December 31st or January 1st.

Table 4.1 – Breakdown of Plans (Other than Listed JSPPs) by Solvency Ratios

Solvency Ratio (SR)	July 1, 2015 to June 30, 2016		July 1, 2016 to June 30 2017		July 1, 2017 to June 30 2018[4]		July 1, 2018 to June 30, 2019	
	# of Plans	% of Plans	# of Plans	% of Plans	# of Plans	% of Plans	# of Plans	% of Plans
SR < 0.60	14	4.3%	16	1.6%	14	1.7%	17	4.5%
0.60 ≤ SR < 0.80	102	31.3%	113	11.7%	61	7.2%	62	16.6%
0.80 ≤ SR < 0.85	35	10.7%	120	12.4%	57	6.8%	31	8.3%
Sub-Total < 0.85	151	46.3%	249	25.7%	132	15.7%	110	29.4%
0.85 ≤ SR < 0.90	54	16.6%	264	27.2%	159	18.9%	43	11.5%

[3] The number of plans for 2015-2018 inclusive may differ from those reported in the 2018 Report due to a variety of reasons including reports filed after last year's cut-off date of Dec. 31, 2018, plans that have been wound up, converted to a DC arrangement, plans that filed a late report or have had their registration moved out of the province.

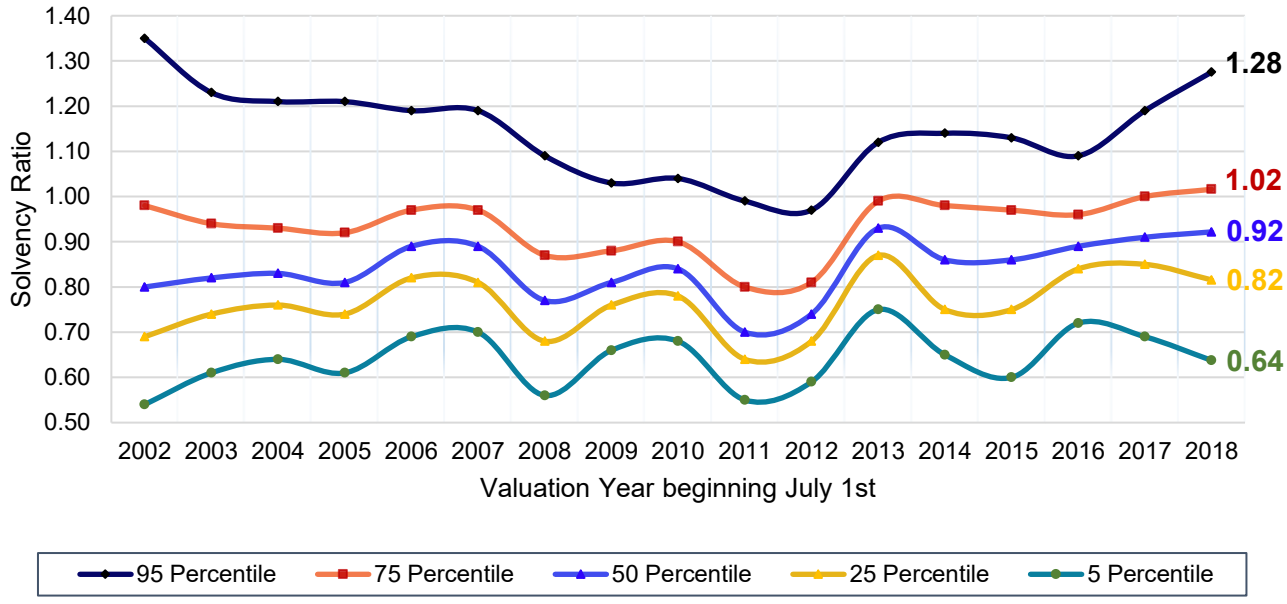
[4] The information for 2017-2018 disclosed in the 2018 Report was incorrect and has been revised.

0.90 ≤ SR < 1.00	50	15.3%	309	31.9%	335	39.8%	115	30.7%
Sub-Total < 1.00	255	78.2%	822	84.8%	626	74.4%	268	71.6%
1.00 ≤ SR < 1.20	53	16.3%	125	12.9%	177	21.1%	80	21.4%
SR ≥ 1.20	18	5.5%	22	2.3%	38	4.5%	26	7.0%
Total	326	100.0%	969	100.0%	841	100.0%	374	100.0%
Median Ratio	0.86		0.89		0.93		0.92	

The percentage of plans with a solvency ratio less than 0.85 has increased from 15.7% during the 2017/2018 valuation period to 29.4% in the 2018/2019 valuation period. However, the proportion of underfunded plans on a solvency basis (i.e., a solvency ratio less than 1.0) decreased from 74.4% during the 2017/2018 valuation period to 71.6% in the 2018/2019 valuation period.

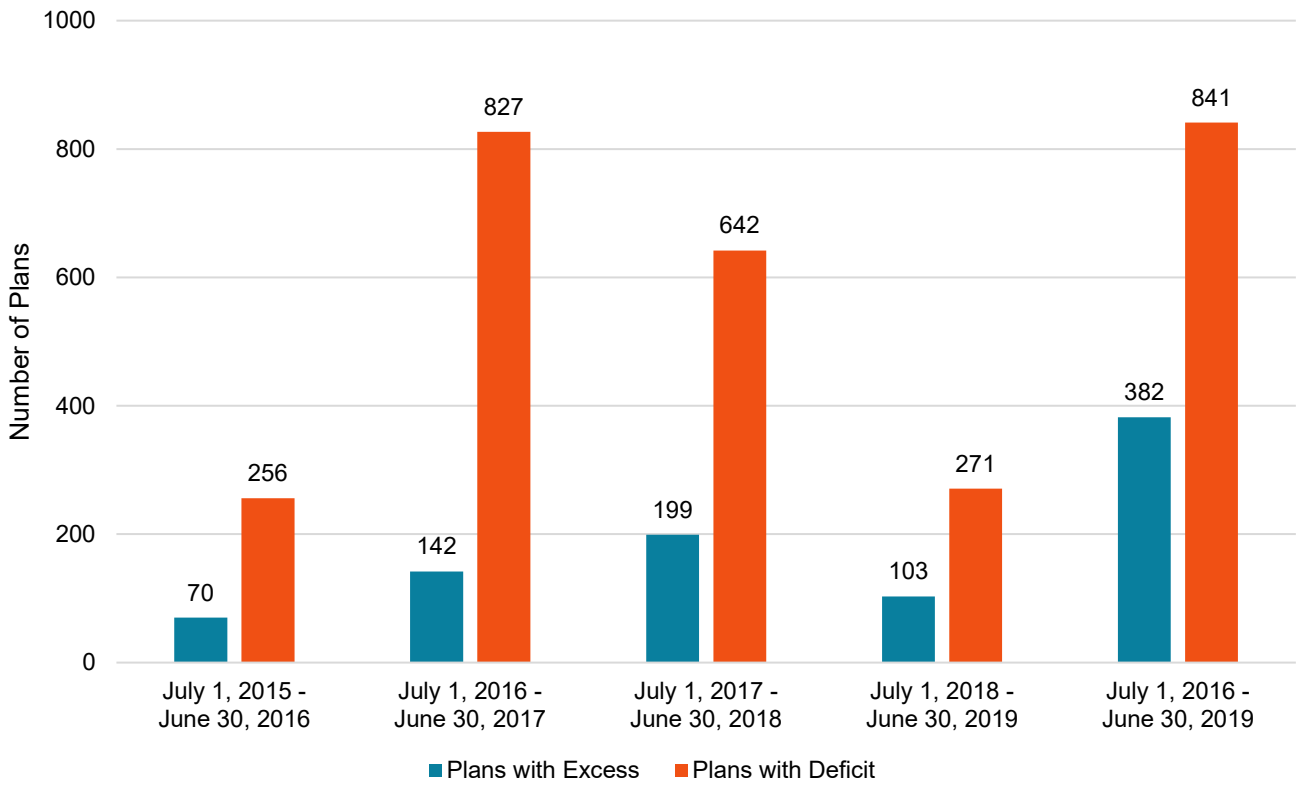
Chart 4.2 shows the distribution of solvency ratios at different percentiles from 2002 to 2018. Since the 2007 valuation period, the solvency ratios of pension plans have been volatile.

Chart 4.2 - Solvency Ratios: 2002 to 2018

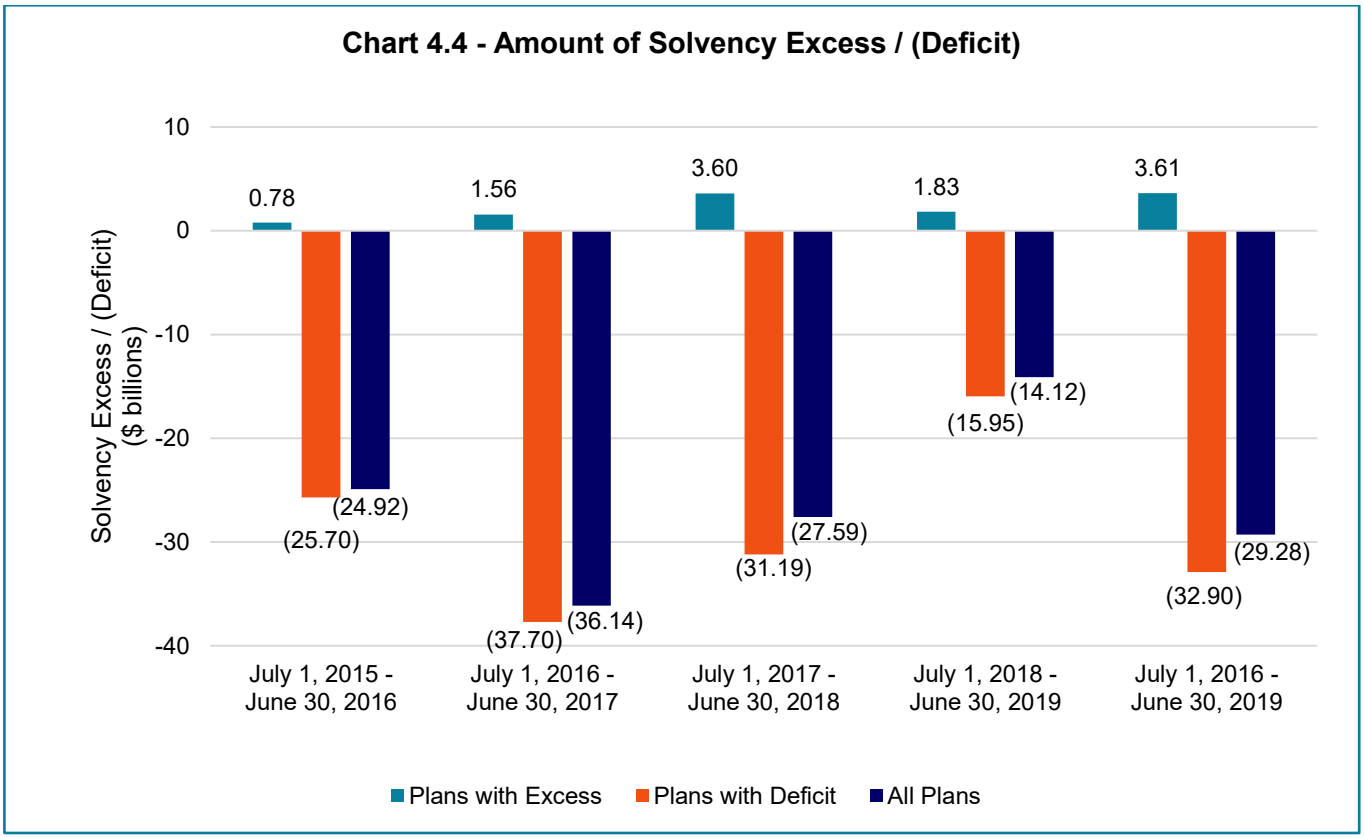


Charts 4.3 and 4.4 compare plans with a solvency excess to those with a solvency deficit for each of the four valuation periods from 2015/2016 to 2018/2019, as well as for the three-year valuation period from July 1, 2016 to June 30, 2019.[5] Chart 4.3 compares the number of plans and Chart 4.4 compares the amount of solvency excess or deficit. The number of plans with solvency excess has remained well below the number of plans with solvency deficit.

Chart 4.3 - Number of Plans (Other than Listed JSPPs) with Solvency Excess vs. Solvency Deficit



[5] Individual valuation periods include those plans that filed a report with a valuation date that fell during that individual period. The July 1, 2016 - June 30, 2019 period includes only the last funding valuation report filed. The total number of plans included in each of the valuation periods is therefore higher than the number of plans included in the combined period.



On a dollar amount basis, the latest filed reports during the July 1, 2016 to June 30, 2019 valuation period revealed a *net* solvency deficit of $29.3 billion (after allowance for expenses) on solvency liabilities of $268.4 billion. This represents the total level of under-funding for the 1,223 DB plans analyzed in the 2019 Report, excluding the Listed JSPPs.

Ontario's legislation allows certain benefits (e.g., post-retirement indexation, consent benefits, excluded plant closure and excluded permanent layoff benefits) to be excluded in the determination of solvency liabilities. There were 260 plans that excluded one or more of these benefits, resulting in a reduction of liabilities totaling $43.7 billion. Thus, the total wind up funding shortfall, after making allowances for expenses, is $73.0 billion ($29.3 billion plus $43.7 billion). This measures the funding shortfall of all the plans in the database if they were to have wound up at their last valuation dates. Of course, this only depicts a hypothetical scenario as the majority of pension plans continue operating on a going-concern basis.

4.2 Actuarial Assumptions

Going-Concern Interest Rate

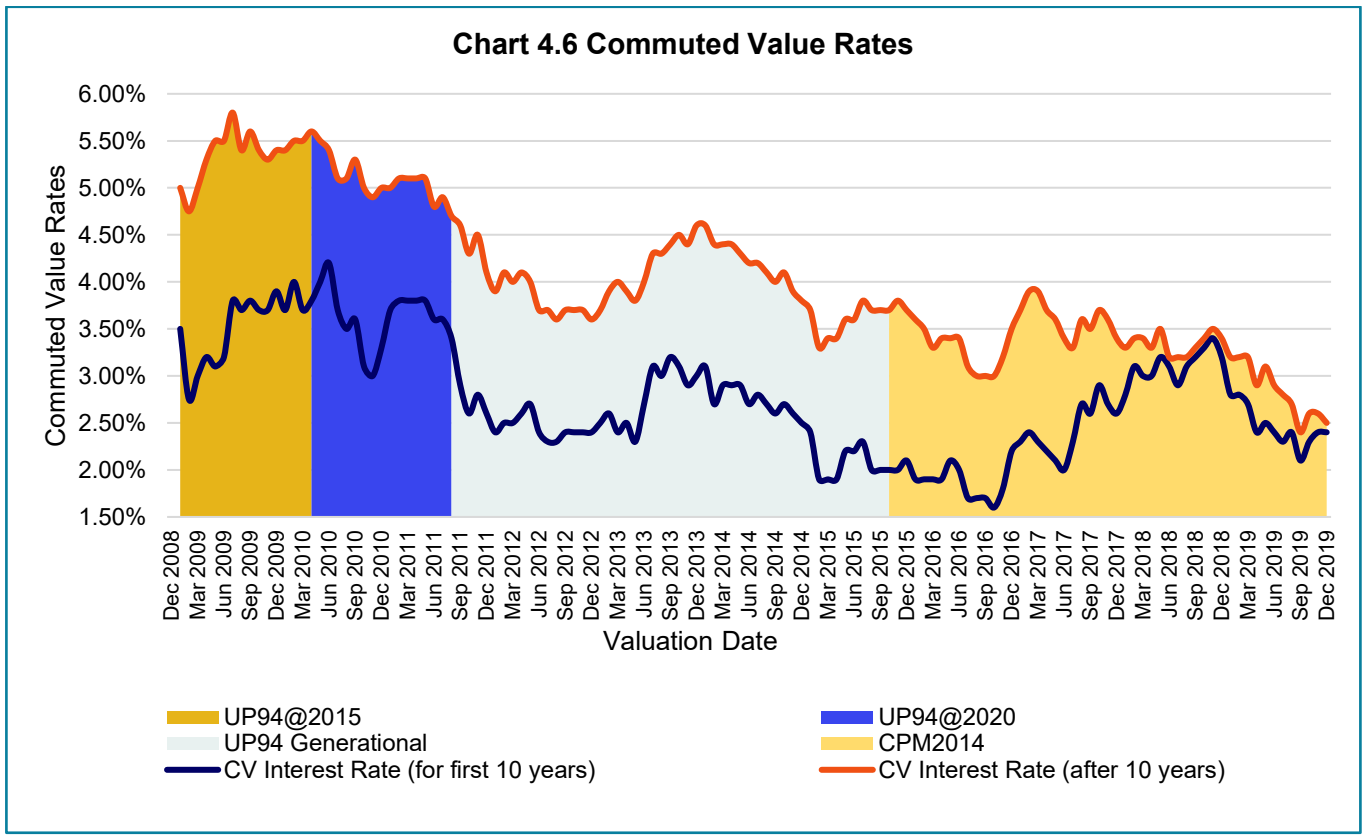
Table 4.5 shows the interest rate assumptions used in the going-concern valuations. The trend to using lower interest rate assumptions that existed into the July 1, 2016 to June 30, 2017 valuation period appears to have reversed in the July 1, 2017 to June 30, 2018 valuation period and remained flat. However, they are still lower than the levels in the July 1, 2014 to June 30, 2015 valuation period in general. For example, 12% of the actuarial valuation reports included in our analysis with valuation dates between July 1, 2017 and June 30, 2018 used an interest rate equal to or greater than 6.00% and 40% used an interest rate equal to or greater than 5.50% (increased from 8% and 25% respectively for those reports with valuation dates between July 1, 2016 and June 30, 2017 included in the 2018 Report).

Table 4.5 – Going-Concern Interest Rate Assumption by Valuation Period

Rate (%)	July 1, 2015 to June 30, 2016		July 1, 2016 to June 30, 2017		July 1, 2017 to June 30, 2018		July 1, 2018 to June 30, 2019	
	# of Plans	% of Plans	# of Plans	% of Plans	# of Plans	% of Plans	# of Plans	% of Plans
Rate < 4.00	46	13.8%	142	14.5%	109	12.9%	60	15.8%
4.00 ≤ Rate < 4.50	32	9.6%	122	12.5%	74	8.7%	26	6.8%
4.50 ≤ Rate < 5.00	42	12.6%	179	18.3%	105	12.4%	52	13.7%
5.00 ≤ Rate < 5.50	106	31.7%	284	29.1%	221	26.1%	92	24.2%
5.50 ≤ Rate < 6.00	64	19.1%	173	17.7%	234	27.6%	98	25.8%
6.00 ≤ Rate < 6.50	40	12.0%	71	7.3%	97	11.4%	47	12.4%
Rate ≥ 6.50	4	1.2%	6	0.6%	8	0.9%	5	1.3%
Total	334	100.0%	977	100.0%	848	100.0%	380	100.0%
Average (%)	4.94%		4.82%		5.06%		5.01%	

Solvency Interest Rates

Chart 4.6 graphs the non-indexed commuted value and mortality basis over the period shown based on the CIA Standards of Practice for Pension Plans applicable as of the valuation date.

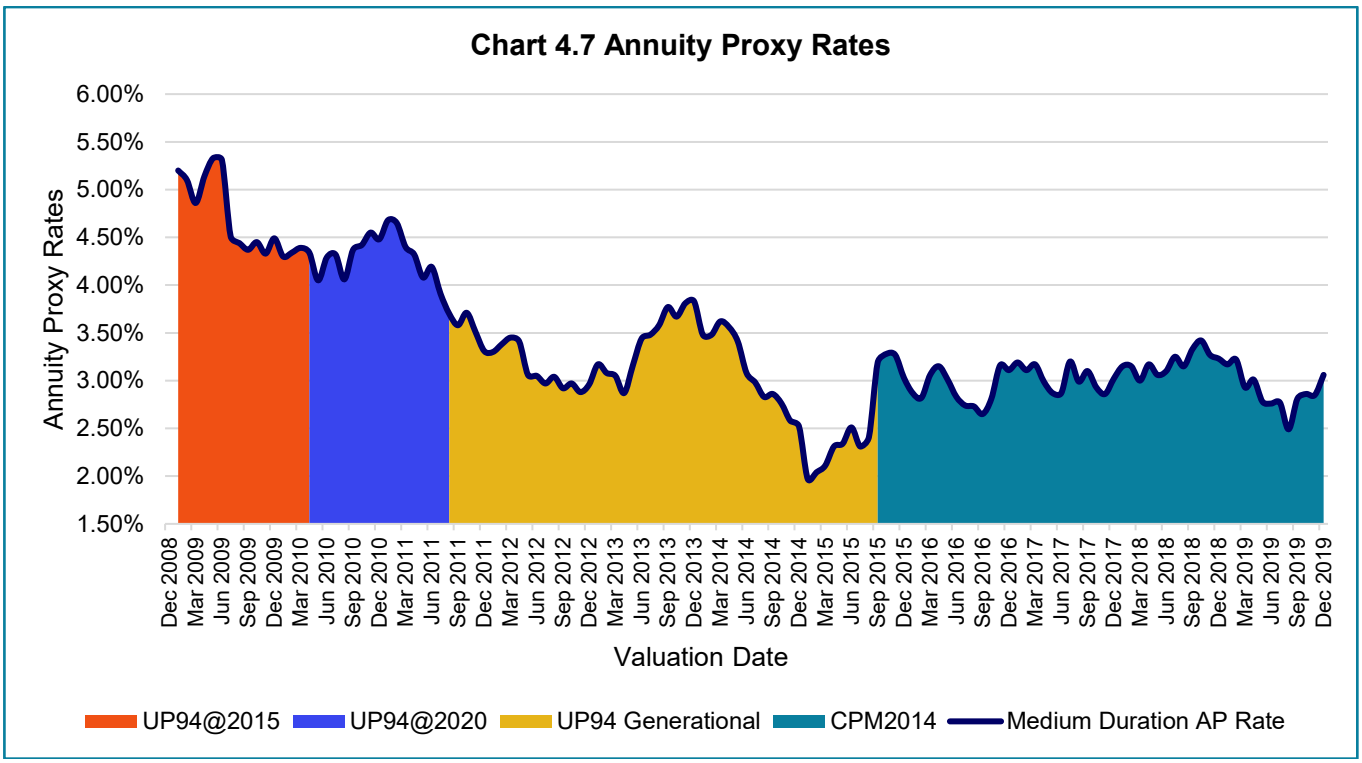


The CIA periodically updates its Guidance to actuaries for estimating the cost of purchasing a group annuity for Hypothetical Wind up and Solvency Valuations. An Educational Note was issued on April 24, 2020 from the Committee on Pension Plan Financial Reporting (PPFRC) that was applicable for valuation dates between December 31, 2019 and December 30, 2020. The Guidance concluded that for valuations within this period, an appropriate discount rate for estimating the cost of purchasing a non-indexed group annuity, prior to any adjustment for sub- or super-standard mortality, would be determined based on the interpolation method, applicable durations and spreads outlined below:

Illustrative Block	Duration	Spread above unadjusted CANSIM V39062
Low Duration	8.6	110 bps
Medium Duration	11.2	120 bps
High Duration	13.7	120 bps

It should be noted that the PPFRC issued two supplements to the Guidance in 2020 that apply to valuation dates from March 31, 2020 (first supplement) and from June 30, 2020 (second supplement) to December 30, 2020. The changes from these supplements have not be considered in the 2019 Report since it only covers the period to December 31, 2019.

Chart 4.7 graphs the non-indexed interest rates for annuity purchases since 2009 as set out in the historical CIA Guidance. The chart shows estimated interest rates based on liabilities with a medium duration, where applicable.



5.0 Investment

The plans included in the investment data analysis are a subset of the 1,230 plans identified in Section 2 of this 2019 Report. This subset consists of plans that have filed an Investment Information Summary (IIS) for the most recent 2019 monitoring cycle (fiscal year-ends between July 1, 2018 and June 30, 2019). There are 1,206 plans included in the investment data analysis, representing 98% of the plans included in the funding data analysis.[6] This number includes the seven Listed JSPPs. For hybrid plans, only the DB assets are included in the data.

5.1 Summary of Pension Fund Profiles and Performance

The asset mix of the 1,206 plans for the most recent monitoring cycle and their performance are summarized in Table 5.1 and depicted in Chart 5.2, Chart 5.3 and Chart 5.4.

In the Asset Mix section, the weight of each asset class is shown for all plans in each subgroup and for all plans as a whole.

In the Performance section, all performance numbers are determined at the individual plan level. “Average Return” means the average gross rate of return and “Average Investment Fees” means the average expenses paid from the pension plan related to managing the pension plan’s investments, expressed as a percentage of average assets during the reporting year.

[6] Plans not included here are primarily plans with outstanding IIS filings.

Table 5.1 – Investment Profile of All Plans

	SEPP		MEPP		Listed JSPP	
Number of Plans	1,127		72		7	
Asset Mix	Market Value (in Millions)	% of Total Investments	Market Value (in Millions)	% of Total Investments	Market Value (in Millions)	% of Total Investments
Cash	$8,930	4.4%	$975	2.7%	$27,605	6.4%
Bond	$86,625	43.0%	$11,600	32.3%	$187,477	43.6%
Equity	$71,866	35.6%	$16,616	46.2%	$56,934	13.2%
Real Estate	$17,638	8.7%	$3,811	10.6%	$42,515	9.9%
Alternative Investments[7]	$16,654	8.3%	$2,946	8.2%	$115,506	26.9%
Total	$201,714	100.0%	$35,948	100.0%	$430,037	100.0%

[7] Alternative Investments include hedge funds, private equity, infrastructure, currency hedging, resource properties, commodities, etc.

Performance			
Average Gross Return[8]	-0.48%	-0.73%	1.29%
Avg Investment Fees	0.37%	0.44%	0.40%
Average Admin Fees	0.60%	0.36%	0.16%
Average Total Fees	0.97%	0.80%	0.56%

[8] The average return in this table and other tables in this section are the arithmetic (equally-weighted) average of investment returns of the pension funds in each subgroup. The average of investment returns weighted by the sizes of all 1,206 pension funds is 1.81%, compared to -0.48% on an equally-weighted basis as shown in this table.

Chart 5.2: Asset Allocation of SEPPs

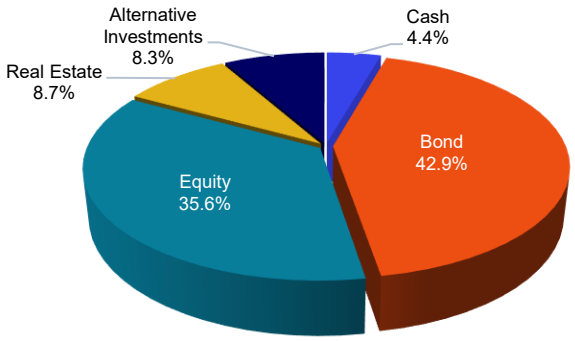


Chart 5.3: Asset Allocation of MEPPs

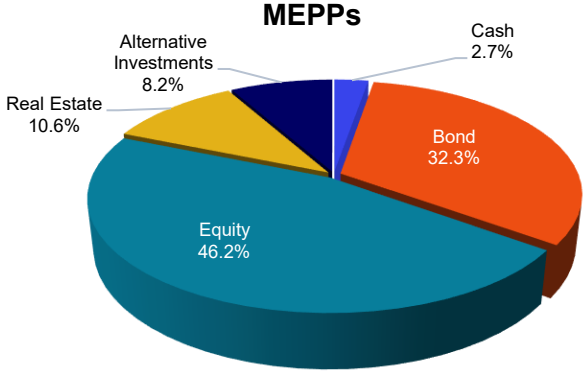
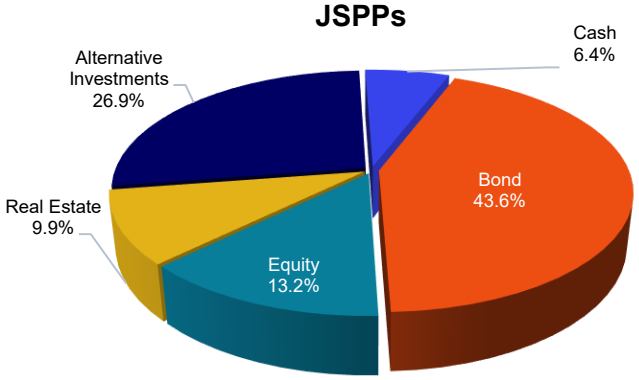


Chart 5.4: Asset Allocation of Listed JSPPs



On a broad basis, traditional fixed income assets (consisting of cash and bonds) constitute 47% of total investments for the SEPPs. Non-fixed income assets (consisting of equity, real estate and alternative investments) constitute 53% of total investments, although we note that the nature of alternative investments means that they cannot always be classified as purely fixed or non-fixed income.

By comparison, the MEPPs and the seven Listed JSPPs (which are mostly large public sector plans) have a very different aggregate asset mix. The MEPPs have a much lower allocation to traditional fixed income assets and the Listed JSPPs exhibit a higher percentage of alternative investments and lower proportion of equity investments.

Table 5.5 – Performance Result Percentiles by Plan Type

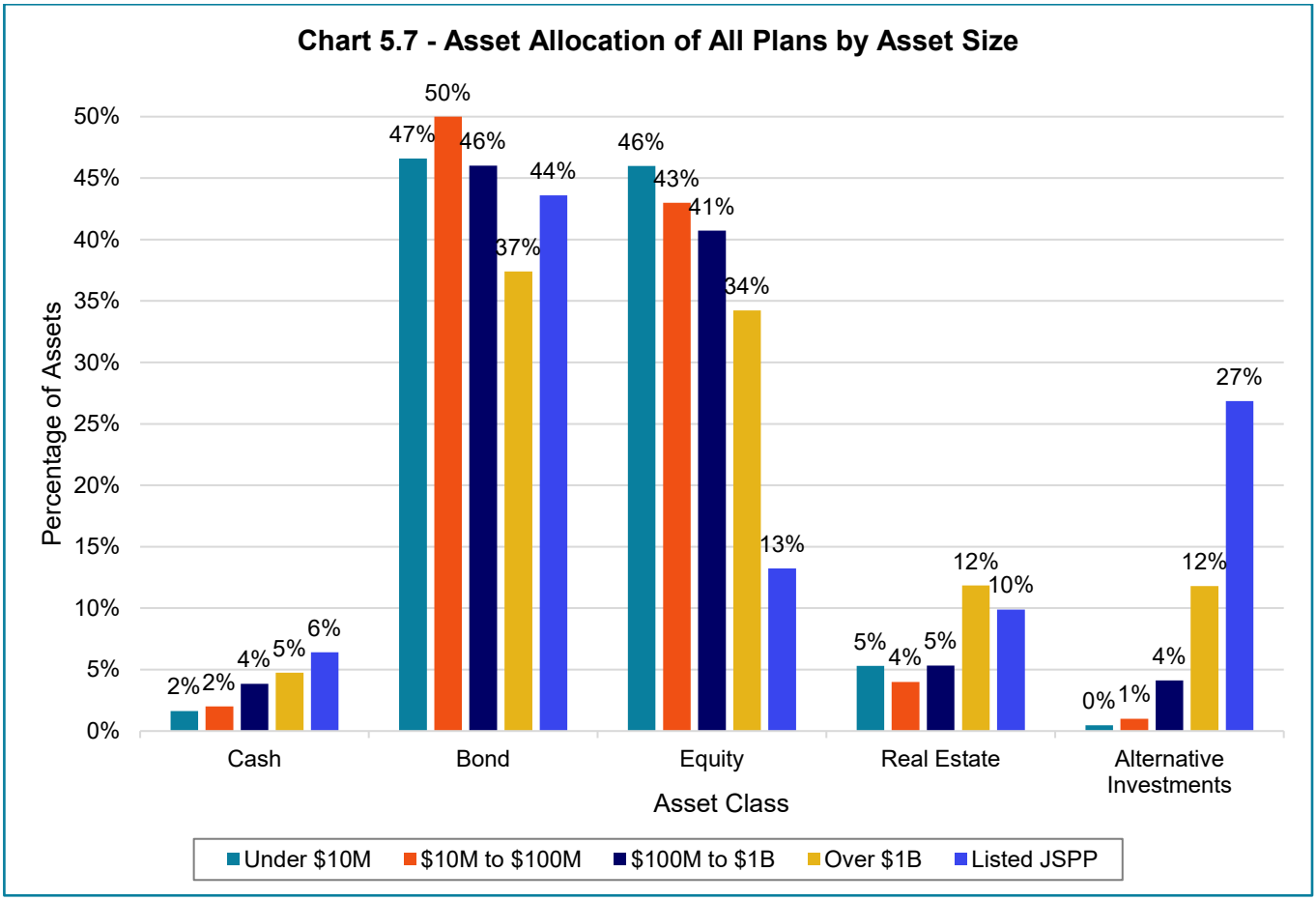
Plan Type	SEPP	MEPP	Listed JSPP	All Plans
# of Plans	1,127	72	7	1,206
Gross Investment Returns				
90th Percentile	3.54%	2.25%	2.85%	3.45%
75th Percentile	0.39%	0.22%	2.38%	0.39%
Median	-0.98%	-1.35%	1.23%	-0.99%
25th Percentile	-2.20%	-2.09%	0.34%	-2.18%
10th Percentile	-3.41%	-3.18%	-0.30%	-3.40%
Investment Fees				
90th Percentile	0.77%	0.68%	0.75%	0.76%
75th Percentile	0.53%	0.52%	0.58%	0.53%
Median	0.34%	0.43%	0.25%	0.35%
25th Percentile	0.12%	0.32%	0.21%	0.14%
10th Percentile	0.00%	0.23%	0.14%	0.00%
Administrative Fees				
90th Percentile	1.30%	0.69%	0.29%	1.27%
75th Percentile	0.64%	0.45%	0.25%	0.63%
Median	0.31%	0.26%	0.12%	0.30%

25th Percentile	0.10%	0.15%	0.10%	0.10%
10th Percentile	0.00%	0.07%	0.05%	0.00%
		Total Fees		
90th Percentile	1.80%	1.33%	1.01%	1.75%
75th Percentile	1.14%	0.86%	0.78%	1.11%
Median	0.70%	0.70%	0.37%	0.70%
25th Percentile	0.41%	0.54%	0.32%	0.42%
10th Percentile	0.20%	0.44%	0.28%	0.21%

Allocations to various asset classes vary among pension plans, based on the total value of their assets. Generally, the larger the pension fund, the higher the allocations to real estate and alternative investments and the less to bond and equity. This difference is especially noticeable when comparing pension funds with over $1 billion in assets to those that are smaller. The asset allocation of all plans, and performance, by asset size is shown in Table 5.6 and depicted in Chart 5.7.

Table 5.6 – Asset Allocation of All Plans by Asset Size

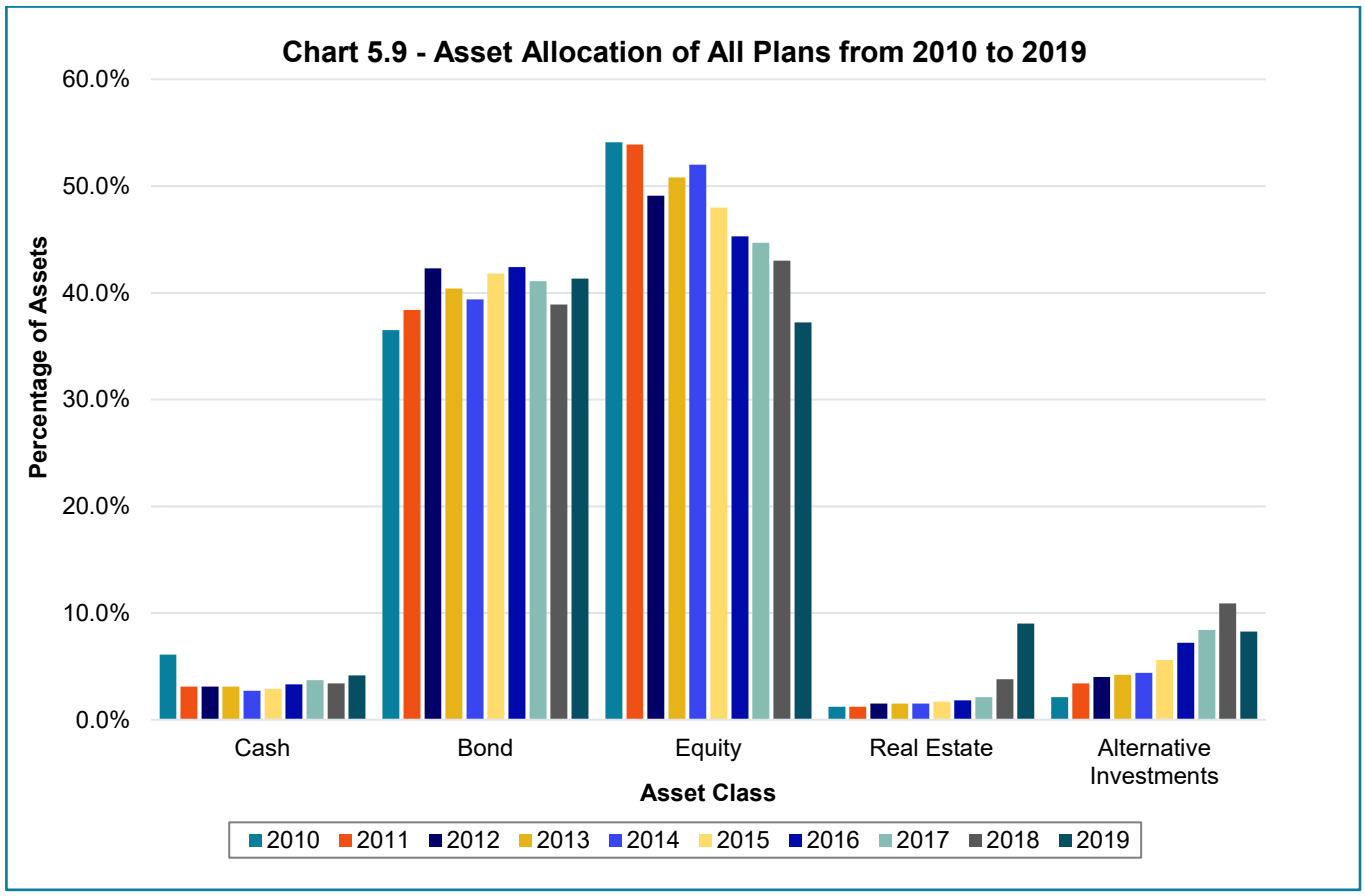
Size of Plan Assets	Under $10M	$10M to $100M	$100M to $1B	Over $1B	Listed JSPP	All Plans
# of Plans	356	551	250	42	7	1,206
Cash	1.6%	1.8%	3.8%	4.7%	6.4%	5.6%
Bond	46.6%	49.7%	46.0%	37.5%	43.6%	42.8%
Equity	46.0%	43.6%	40.7%	34.2%	13.2%	21.8%
Real Estate	5.3%	4.3%	5.4%	11.8%	9.9%	9.6%
Alternative Investments	0.5%	0.6%	4.1%	11.8%	26.9%	20.2%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Performance						
Average Gross Return	-0.86%	-0.44%	-0.38%	1.26%	1.29%	-0.50%
Average Investment Fees	0.51%	0.34%	0.28%	0.31%	0.40%	0.37%
Average Admin Fees	1.08%	0.47%	0.21%	0.12%	0.16%	0.58%
Average Total Fees	1.59%	0.81%	0.49%	0.43%	0.56%	0.96%

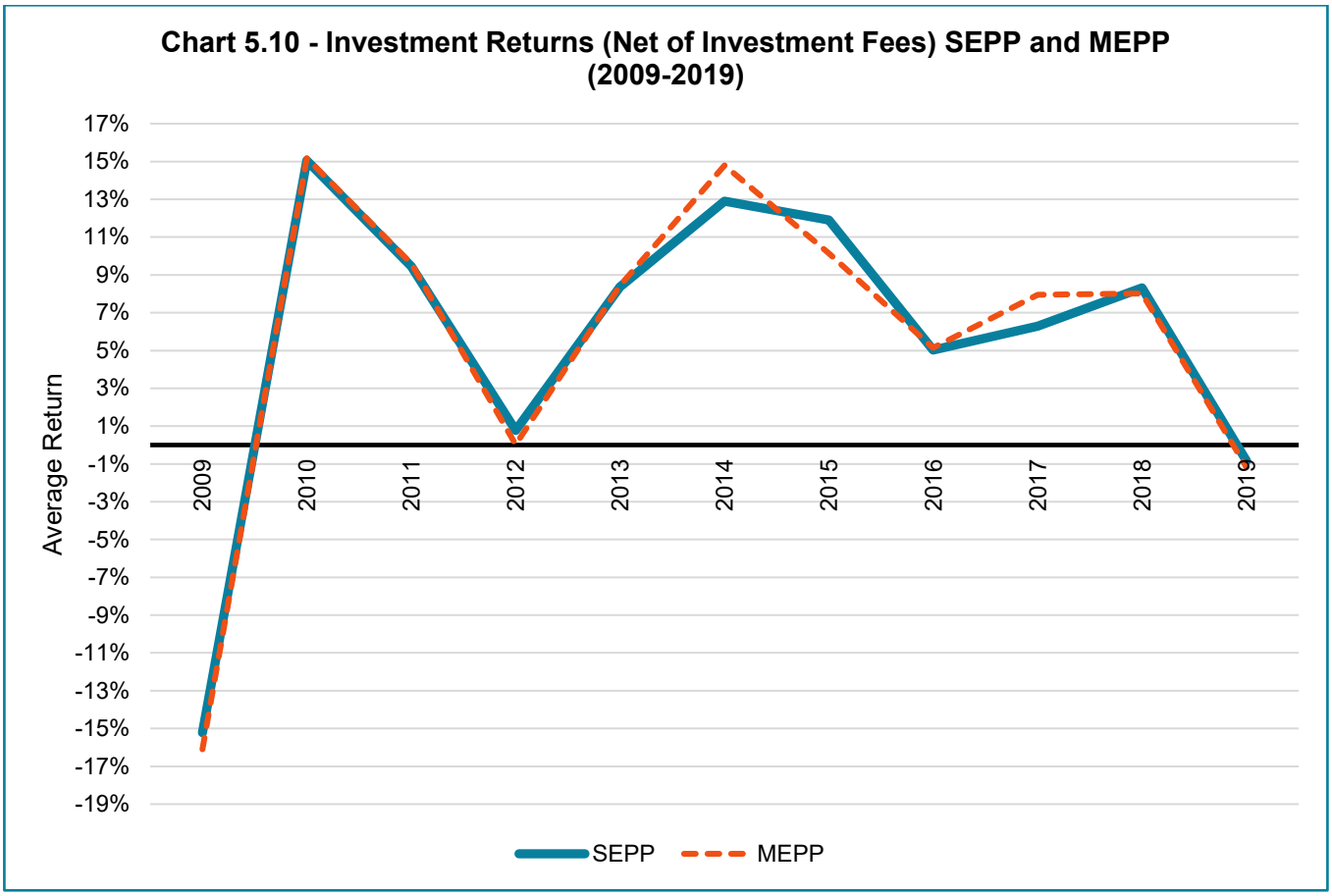


Investment data reported in previous annual reports on the funding and investment of DB pension plans in Ontario from 2010 to 2019 monitoring cycles (each starting at July 1st the previous year) demonstrates a general decreasing trend in pension fund asset allocation in equity and a general increasing trend in in alternative investments. The asset allocation of all plans (other than the Listed JSPPs) over this period is shown in Table 5.8 and depicted in Chart 5.9.

Table 5.8 – Asset Allocation of All Plans (Other than Listed JSPPs) from 2010 to 2019

Asset Class	% of Total Investments									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Cash	6.1%	3.1%	3.1%	3.1%	2.7%	2.9%	3.3%	3.7%	3.4%	4.2%
Bond	36.5%	38.4%	42.3%	40.4%	39.4%	41.8%	42.4%	41.1%	38.9%	41.4%
Equity	54.1%	53.9%	49.1%	50.8%	52.0%	48.0%	45.3%	44.7%	43.0%	37.2%
Real Estate	1.2%	1.2%	1.5%	1.5%	1.5%	1.7%	1.8%	2.1%	3.8%	9.0%
Alternative Investments	2.1%	3.4%	4.0%	4.2%	4.4%	5.6%	7.2%	8.4%	10.9%	8.2%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%





5.2 Additional Information

This section provides additional fund performance information, for plans other than Listed JSPPs, based on plan's solvency ratio and percentage of funds invested in pooled funds.

By Solvency Ratio (for plans other than Listed JSPPs)

Table 5.11 – Investment Results by Solvency Ratio (SR)

Solvency Ratio (SR)		SR < 0.85	0.85 ≤ SR < 1	SR ≥ 1.0	All Plans
# of Plans		153	674	372	1,199
Asset Mix	Fixed Income (Cash and Bond)	36.4%	46.9%	49.8%	45.5%
	Equity	45.6%	36.0%	33.2%	37.2%
	Real Estate	7.7%	9.5%	9.0%	9.0%
	Alternative Investments	10.3%	7.6%	8.0%	8.3%
Total					
Performance	Average Gross Return	-0.66%	-0.77%	0.08%	-0.49%
	Average Investment Fees	0.46%	0.37%	0.35%	0.37%

It appears that better funded plans tend to have higher allocation to fixed income – this could perhaps be attributed to any de-risking strategies that these plans might have implemented.

By Percentages Invested in Pooled Funds (for plans other than Listed JSPPs)

Table 5.12 – Investment Results by Percentage Invested in Pooled Funds

% Invested in Pooled Funds \ Plan Size		Under $10M	$10M to $100M	$100M to $1B	Over $1B
<20%	# of plans	13	51	39	13
	Average Gross Return	-2.35%	-0.18%	-0.56%	1.05%
	Average Investment Fees	0.35%	0.30%	0.28%	0.24%
20% - 80%	# of plans	22	52	74	21
	Average Gross Return	-0.94%	-0.51%	-0.34%	1.66%
	Average Investment Fees	0.32%	0.29%	0.28%	0.38%
>80%	# of plans	321	448	137	8
	Average Gross Return	-0.80%	-0.46%	-0.35%	0.54%
	Average Investment Fees	0.53%	0.35%	0.28%	0.24%
Total	# of plans	356	551	250	42
	Average Gross Return	-0.86%	-0.44%	-0.38%	1.26%
	Average Investment Fees	0.51%	0.34%	0.28%	0.31%

Allocation to pooled funds decreases with size of the plan. There appears to be a positive relationship between the percentage of assets invested in pooled funds and gross returns for the mid-size plans and the reverse is observed for plans with over $1 billion in assets.

6.0 Baseline Projections

This section estimates annual funding contributions and funded positions of all plans to December 31, 2019 to facilitate continued monitoring and trend analysis.

6.1 Estimated DB Funding Contributions in 2020

Table 6.1 presents 2020 estimated funding contributions – comprising normal costs and special payments – for DB plans including hybrid plans with defined benefit provisions. Estimates are based on contribution recommendations set out in most recently filed plan valuation reports between July 1, 2016 and June 30, 2019.[9]

Table 6.1 – Estimated DB Funding in 2020

	SEPP		MEPP	Listed JSPP	All Plans
	Plans with Solvency Excess	Plans with Solvency Deficit			
Number of Plans	380	770	73	7	1,230
(In Millions)					
Employer Normal Cost Contributions	$496	$1,942	$1,155	$5,339	$8,932
Member Required Contributions	$131	$825	$144	$5,056	$6,156
Sub-total	$627	$2,767	$1,299	$10,395	$15,088
Special Payments	$28	$718	$587[10]	$985	$2,318
Total	$655	$3,485	$1,886	$11,380	$17,406

[9] For plans where the AIS reported contributions did not extend to cover 2020, the 2020 estimated contributions were determined assuming contributions would continue at the last available rate.

[10] The special payments for MEPP disclosed in the 2018 Report was revised to $552 million, due to a correction in the AIS data used in the 2018 Report.

Total 2020 DB funding contributions are estimated to be $17.4 billion of which 13.3% represents special payments of $2.3 billion. This compares to the total 2019 DB funding contributions estimated in the 2018 Report of $18.1 billion. The decrease of $663 million consists of decreases of $387 million in employer normal costs, $104 million in member required contributions and $172 million in special payments.

For plans other than MEPPs and Listed JSPPs, the table also provides a breakdown of estimated funding contributions between plans with a solvency excess and plans with a solvency deficit in the most recently filed report. Special payments of $28 million represent 4.3% of total contributions for SEPPs with a solvency excess. This compares with special payments of $718 million, representing about 20.6% of total contributions for SEPPs with solvency deficits.

Estimated 2020 funding contributions are determined after consideration of prior year credit balances or funding excesses, subject to statutory restrictions.

6.2 Projected Financial Position as at December 31, 2019

December 31, 2019 Solvency Position Projection

Table 6.2 presents the distribution of solvency ratios reported in last filed valuation reports and the distribution of projected solvency ratios (PSRs) derived by projecting DB solvency plan assets and actuarial liabilities to the end of 2019 (with a comparison of PSRs as at December 31, 2018 included in the 2018 Report). The projections reflect the impact of investment returns, changes in solvency interest rates and expected funding contributions.

Table 6.2 – Distribution of Solvency Ratios

	Actual as at Last Filed Valuation	Projected Solvency Ratio as at Dec 31, 2019			
		SEPP	MEPP	Listed JSPP	All Plans
Median SR	95%	99%	77%	86%	98%
SR < 70%	4%	0%	37%	0%	3%
70% ≤ SR < 85%	8%	10%	34%	29%	11%
85% ≤ SR < 100%	56%	43%	15%	57%	41%
100% ≤ SR	32%	47%	14%	14%	45%

The median projected solvency ratio for all plans has increased to 98% as at December 31, 2019 from 94% as at December 31, 2018. The improvement is primarily attributable to:

- A 7% decrease due to a drop in the solvency valuation interest rates as at December 31, 2019 from their December 31, 2018 levels; partially offset by
- A 11% increase due to an estimated median net investment return of 13.9% as well as estimated contributions made in 2019.

December 31, 2019 Going-Concern Position Projection

With the enhanced focus on going-concern funded positions of DB plans under the funding regime, FSRA also estimated going-concern funded ratios as at December 31, 2019 to facilitate further proactive tracking in the future. December 31, 2019 going-concern funding ratios were developed by projecting DB going-concern plan assets and actuarial liabilities to the end of 2019 and reflecting actual/estimated investment returns to the end of 2019.

Table 6.3 – Distribution of Going-concern (GC) Ratios

	Actual as at Last Filed Valuation	Projected GC Ratio as at Dec 31, 2019			
		SEPP	MEPP	Listed JSPP	All Plans
Median GC Ratio	110%	115%	114%	107%	115%
GC Ratio < 70%	1%	0%	0%	0%	0%
70% ≤ GC Ratio < 85%	3%	2%	1%	0%	2%
85% ≤ GC Ratio < 100%	19%	11%	10%	0%	11%
100% ≤ GC Ratio	77%	87%	89%	100%	87%

It should be noted that the going-concern ratios are determined as defined in Regulation 909 and do not include any PfAD.

Methodology and Assumptions

Results reported in the most recently filed valuation reports (i.e., assets and liabilities) were projected to December 31, 2019 reflecting estimated investment returns and expected contributions along with the following assumptions:

- Sponsors would use all available funding excess and prior year credit balances for contribution holidays subject to statutory restrictions;
- Sponsors would make all required normal cost contributions and minimum statutory special payments; and
- Cash outflows equal to pension amounts payable to retired members as reported in last filed valuation reports were deducted from both plan assets and liabilities. Plan administration costs were indirectly reflected through the use of net after expense investment returns.

Each plan's unique projection period investment returns for 2016, 2017 and 2018 were determined based on its IIS fillings.

Table 6.4 – Individual Plan 2016, 2017 and 2018 Rate of Return Statistics

	5th Percentile	1st Quartile	2nd Quartile	3rd Quartile	95th Percentile
2018 Gross Return	-4.1%	-2.2%	-1.0%	0.4%	6.2%
2018 Net After Investment Expense	-4.6%	-2.6%	-1.4%	0.1%	5.7%
2018 Net After All Expense	-5.7%	-3.2%	-1.8%	-0.2%	5.3%
2017 Gross Return	5.0%	7.6%	8.9%	10.0%	12.6%
2017 Net After Investment Expense	4.7%	7.2%	8.4%	9.6%	12.2%
2017 Net After All Expense	3.8%	6.6%	7.9%	9.2%	11.6%
2016 Gross Return	2.2%	4.7%	6.4%	8.1%	11.6%
2016 Net After Investment Expense	1.9%	4.3%	5.9%	7.6%	11.1%
2016 Net After All Expense	1.0%	3.7%	5.4%	7.2%	10.6%

For 2019, each plan's returns were estimated based on its 2018 IIS asset allocation information in conjunction with 2019 market index returns, offset by a 25 basis point quarterly expense allowance.

Table 6.5 – Estimated Rate of Return Statistics for 2019 based on Market Index Returns

	5th Percentile	1st Quartile	2nd Quartile	3rd Quartile	95th Percentile
2019 Gross Return	9.0%	12.6%	14.8%	16.5%	18.3%
2019 Net After All Expense	7.9%	11.5%	13.9%	15.5%	17.3%

Table 6.6 – 2019 Market Index Returns

	S&P / TSX Total Return Index	MSCI World Total Net Return Index	FTSE TMX Universe Bond Index	FTSE TMX Long Bond Index
Q4 2019	3.2%	6.3%	-0.8%	-1.9%
Q3 2019	2.5%	1.9%	1.2%	2.5%
Q2 2019	2.6%	1.7%	2.5%	4.8%
Q1 2019	13.3%	10.0%	3.9%	6.9%

Table 6.7 – Projected Solvency Valuation Bases at December 31, 2018 and 2019:

	Commuted Value Basis	Annuity Purchase Basis
December 31, 2019	Interest: 2.40% for 10 years, 2.50% thereafter Mortality: CPM2014 generational	Interest: 3.06% Mortality: CPM2014 generational
December 31, 2018	Interest: 3.20% for 10 years, 3.40% thereafter Mortality: CPM2014 generational	Interest: 3.23% Mortality: CPM2014 generational

7.0 Glossary

The following terms are explained for the purpose of this report:

Defined Benefit (DB) 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 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 based on the member's earnings over the member's entire period of service.
- Flat Benefit – the benefit is based on a fixed dollar amount for each year of service.

Defined Contribution (DC) Pension Plan: In a defined contribution plan, the pension benefit is based solely on the amount of pension that can be provided by the amount contributed to the member's individual account together with any expenses and investment returns allocated to that account.

Frozen DB Plans: Pension plans in which members have a frozen defined benefit entitlement and do not accrue any future service in that pension plan.

Frozen Hybrid: Pension plans in which members have a frozen defined benefit entitlement, but are accruing future defined contribution benefits.

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 would 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 (e.g., indexation, prospective benefit increases, or plant closure/layoff benefits).

Hybrid Pension Plan: A hybrid pension plan contains both defined benefit and defined contribution provisions. A member's pension benefit may be a combination of the defined benefit plus the defined contribution entitlement or a pension benefit which is the greater of the defined benefit entitlement or the defined contribution entitlement.

Jointly sponsored pension plan (JSPP): A jointly sponsored pension plan is a special type of pension plan in which decision making and contributions are shared by both plan members and their employer(s). A JSPP provides defined benefits to plan members and contributions are always made by both plan members and their employers (this is known as a contributory plan).

Multi-Employer Pension Plan (MEPP): A multi-employer pension plan covers the employees of two or more unrelated employers. These plans may provide defined benefits but, in most MEPPs, the required contributions are negotiated and fixed through collective bargaining.

Single Employer Pension Plan (SEPP): A single employer pension plan is one in which a single employer, or several related employers within a corporate group, participate and contribute to the same pension plan. A SEPP can be provided to all employees, or just certain classes of employees (e.g., all unionized employees). It is usually governed and administered by the plan sponsor without input from plan members.

8.0 Appendix – Additional Informtion

This appendix provides additional details of the profile of the plans that have been included in the funding data analysis. The data consists of DB pension plans that have filed valuation reports with valuation dates between July 1, 2016 and June 30, 2019. Please refer to Section 2.0 – Funding Data for details of how the data was compiled.

Table 8.1 shows a reconciliation of the 1,364 plans analyzed in the 2018 Report to the 1,230 plans analyzed in the 2019 Report and Table 8.2 compares the number of plans analyzed in the current report with the plans analyzed in previous reports.

Table 8.1 – Reconciliation of Plans from the 2018 Report to the 2019 Report

Plan Type	Final Average	Career Average	Flat Benefit	Hybrid	Frozen DB & Hybrid	MEPP	Listed JSPP	TOTAL
2018 Report	354	94	157	384	295	73	7	1,364
New plans / Spin-offs	1							1
Previously excluded								
Designated plan	(3)							(3)
Asset Transfer	(15)	(3)	(6)	(14)	(18)			(56)

Conversion from DB to DC		(1)			(1)			(2)
Merger to DB	1							1
Wind up	(18)	(5)	(5)	(11)	(37)			(76)
Data Correction(s)	4	3	(3)		(3)			1
2019 Report	324	88	143	359	236	73	7	1,230

* These are plans that were not included in last year's analysis because they did not file a funding valuation report with a valuation date between July 1, 2015 and June 30, 2018. They have since filed a funding valuation report with a valuation date between July 1, 2016 and June 30, 2019

Table 8.2 – Plans Included in Current and Previous Reports by Plan/Benefit Type

Year	Final Average	Career Average	Flat Benefit	Hybrid	Frozen DB & Hybrid	MEPP	Listed JSPP	Total	Total Membership
2019	324	88	143	359	236	73	7	1,230	3,338,522
2018	354	94	157	384	295	73	7	1,364	3,377,627
2017	356	95	162	385	306	74	0	1,378	1,870,615
2016	352	94	166	384	264	73	0	1,333	1,866,565
2015	366	104	174	397	170	72	0	1,283	1,835,156
2014	384	112	188	386	168	73	0	1,311	1,833,773
2013	425	132	202	391	135	76	0	1,361	1,860,156
2012	455	140	216	387	113	76	0	1,387	1,832,800
2011	491	152	234	381	110	70	0	1,438	1,828,604
2010	548	172	262	371	83	70	0	1,506	1,866,444
2009	640	197	322	310	n/a	70	0	1,539	1,899,155

2008	619	220	338	315	n/a	72	0	1,564	1,867,653
2007	663	236	362	292	n/a	79	0	1,632	1,880,563
2006	730	271	394	224	n/a	79	0	1,698	1,863,433
2005	805	293	424	127	n/a	73	0	1,722	1,801,895
2004	839	292	422	86	n/a	79	0	1,718	1,765,255

Table 8.3 shows a breakdown of the number of plans by size of plan membership.

Table 8.3 – Number of Plans by Size of Membership in Plan

Number of Members in Plan	SEPP	MEPP	Listed JSPP	Total
0 - 49	235	0	0	235
50 - 99	172	1	0	173
100 - 249	267	4	0	271
250 - 499	163	3	0	166
500 - 999	136	12	1	149
1,000 - 4,999	142	25	0	167
5,000 - 9,999	26	10	0	36
10,000 +	9	18	6	33
Total	1,150	73	7	1,230

Table 8.4 shows a breakdown of the total members covered by size of plan membership.

Table 8.4 – Total Membership by Size of Membership in Plan

Number of Members in Plan	SEPP	MEPP	Listed JSPP	Total
0 - 49	5,757	0	0	5,757
50 - 99	12,853	77	0	12,930
100 - 249	43,370	730	0	44,100
250 - 499	57,064	1,130	0	58,194
500 - 999	93,720	8,763	578	103,061
1,000 - 4,999	296,078	57,492	0	353,570
5,000 - 9,999	189,387	72,315	0	261,702
10,000 +	241,516	850,835	1,406,857	2,499,208
Total	939,745	991,342	1,407,435	3,338,522

Table 8.5 – Non-Indexed Commuted Value Rates (CIA Basis)

Year 2019												
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Select 10 Years	2.80%	2.80%	2.70%	2.40%	2.50%	2.40%	2.30%	2.40%	2.10%	2.30%	2.40%	2.40%
Ultimate 10 Years	3.20%	3.20%	3.20%	2.90%	3.10%	2.90%	2.80%	2.70%	2.40%	2.60%	2.60%	2.50%
Year 2018												
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Select 10 Years	2.80%	3.10%	3.00%	3.00%	3.20%	3.10%	2.90%	3.10%	3.20%	3.30%	3.40%	3.20%
Ultimate 10 Years	3.30%	3.40%	3.40%	3.30%	3.50%	3.20%	3.20%	3.20%	3.30%	3.40%	3.50%	3.40%
Year 2017												
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Select 10 Years	2.30%	2.40%	2.30%	2.20%	2.10%	2.00%	2.30%	2.70%	2.60%	2.90%	2.70%	2.60%
Ultimate 10 Years	3.70%	3.90%	3.90%	3.70%	3.60%	3.40%	3.30%	3.60%	3.50%	3.70%	3.60%	3.40%
Year 2016												
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Select 10 Years	1.90%	1.90%	1.90%	1.90%	2.10%	2.00%	1.70%	1.70%	1.70%	1.60%	1.80%	2.20%
Ultimate 10 Years	3.60%	3.50%	3.30%	3.40%	3.40%	3.40%	3.10%	3.00%	3.00%	3.00%	3.20%	3.50%

Year 2015												
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Select 10 Years	2.40%	1.90%	1.90%	1.90%	2.20%	2.20%	2.30%	2.00%	2.00%	2.00%	2.00%	2.10%
Ultimate 10 Years	3.70%	3.30%	3.40%	3.40%	3.60%	3.60%	3.80%	3.70%	3.70%	3.70%	3.80%	3.70%

Year 2014												
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Select 10 Years	3.10%	2.70%	2.90%	2.90%	2.90%	2.70%	2.80%	2.70%	2.60%	2.70%	2.60%	2.50%
Ultimate 10 Years	4.60%	4.40%	4.40%	4.40%	4.30%	4.20%	4.20%	4.10%	4.00%	4.10%	3.90%	3.80%

Year 2013												
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Select 10 Years	2.50%	2.60%	2.40%	2.50%	2.30%	2.70%	3.10%	3.00%	3.20%	3.10%	2.90%	3.00%
Ultimate 10 Years	3.70%	3.90%	4.00%	3.90%	3.80%	4.00%	4.30%	4.30%	4.40%	4.50%	4.40%	4.60%

Year 2012												
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Select 10 Years	2.40%	2.50%	2.50%	2.60%	2.70%	2.40%	2.30%	2.30%	2.40%	2.40%	2.40%	2.40%
Ultimate 10 Years	3.90%	4.10%	4.00%	4.10%	4.00%	3.70%	3.70%	3.60%	3.70%	3.70%	3.70%	3.60%

Year 2011												
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Select 10 Years	3.70%	3.80%	3.80%	3.80%	3.80%	3.60%	3.60%	3.40%	2.90%	2.60%	2.80%	2.60%
Ultimate 10 Years	5.00%	5.10%	5.10%	5.10%	5.10%	4.80%	4.90%	4.70%	4.60%	4.30%	4.50%	4.10%
Year 2010												
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Select 10 Years	3.70%	4.00%	3.70%	3.80%	4.00%	4.20%	3.70%	3.50%	3.60%	3.10%	3.00%	3.30%
Ultimate 10 Years	5.40%	5.50%	5.50%	5.60%	5.50%	5.40%	5.10%	5.10%	5.30%	5.00%	4.90%	5.00%

Table 8.6 – Non-Indexed Annuity Proxy Rates (CIA Basis)

Year 2019												
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low Duration	3.07%	3.12%	2.83%	2.91%	2.68%	2.66%	2.67%	2.39%	2.71%	2.76%	2.75%	2.96%
Medium Duration	3.17%	3.22%	2.93%	3.01%	2.78%	2.76%	2.77%	2.49%	2.81%	2.86%	2.85%	3.06%
High Duration	3.17%	3.22%	2.93%	3.01%	2.78%	2.76%	2.77%	2.49%	2.81%	2.86%	2.85%	3.06%
Year 2018												
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low Duration	3.05%	3.05%	2.90%	3.07%	2.96%	3.00%	3.15%	3.05%	3.23%	3.32%	3.17%	3.13%
Medium Duration	3.15%	3.15%	3.00%	3.17%	3.96%	3.10%	3.25%	3.15%	3.33%	3.42%	3.27%	3.23%
High Duration	3.25%	3.25%	3.10%	3.27%	3.16%	3.10%	3.25%	3.15%	3.33%	3.42%	3.27%	3.23%
Year 2017												
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low Duration	2.99%	2.91%	2.87%	2.69%	2.57%	2.67%	3.00%	2.79%	3.00%	2.83%	2.76%	2.92%
Medium Duration	3.19%	3.11%	3.17%	2.99%	2.87%	2.87%	3.20%	2.99%	3.10%	2.93%	2.86%	3.02%
High Duration	3.29%	3.21%	3.27%	3.09%	2.97%	2.97%	3.30%	3.09%	3.20%	3.03%	2.96%	3.12%

Year 2016												
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low Duration	2.47%	2.42%	2.76%	2.85%	2.71%	2.53%	2.44%	2.43%	2.35%	2.51%	2.86%	2.91%
Medium Duration	2.87%	2.82%	3.06%	3.15%	3.01%	2.83%	2.74%	2.73%	2.65%	2.81%	3.16%	3.11%
High Duration	2.97%	2.92%	3.16%	3.25%	3.11%	2.93%	2.84%	2.83%	2.75%	2.91%	3.26%	3.21%

Year 2015												
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low Duration	1.67%	1.74%	1.81%	2.01%	2.04%	2.01%	1.81%	1.91%	2.89%	2.98%	2.97%	2.63%
Medium Duration	1.97%	2.04%	2.11%	2.31%	2.34%	2.51%	2.31%	2.41%	3.19%	3.28%	3.27%	3.03%
High Duration	2.27%	2.34%	2.41%	2.61%	2.64%	2.81%	2.61%	2.71%	3.29%	3.38%	3.37%	3.13%

Year 2014												
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low Duration	3.28%	3.28%	3.32%	3.26%	3.11%	3.24%	3.28%	3.38%	3.57%	3.47%	3.61%	3.63%
Medium Duration	3.48%	3.48%	3.62%	3.56%	3.41%	3.44%	3.48%	3.58%	3.77%	3.67%	3.81%	3.83%
High Duration	3.58%	3.58%	3.82%	3.76%	3.61%	3.54%	3.58%	3.68%	3.87%	3.77%	3.91%	3.93%

Year 2013												
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low Duration	3.17%	3.08%	3.05%	2.87%	3.16%	2.87%	3.16%	3.24%	3.28%	3.38%	3.57%	3.47%
Medium Duration	3.17%	3.08%	3.05%	2.87%	3.16%	3.44%	3.48%	3.58%	3.77%	3.67%	3.81%	3.83%
High Duration	3.17%	3.08%	3.05%	2.87%	3.16%	3.54%	3.58%	3.68%	3.87%	3.77%	3.91%	3.93%

Year 2012												
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low Duration	3.30%	3.38%	3.45%	3.41%	3.06%	3.05%	2.97%	3.04%	2.92%	2.97%	2.88%	2.96%
Medium Duration	3.30%	3.38%	3.45%	3.41%	3.06%	3.05%	2.97%	3.04%	2.92%	2.97%	2.88%	2.96%
High Duration	3.30%	3.38%	3.45%	3.41%	3.06%	3.05%	2.97%	3.04%	2.92%	2.97%	2.88%	2.96%

Year 2011												
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low Duration	4.68%	4.65%	4.40%	4.32%	4.08%	4.19%	3.91%	3.70%	3.58%	3.71%	3.51%	3.31%
Medium Duration	4.68%	4.65%	4.40%	4.32%	4.08%	4.19%	3.91%	3.70%	3.58%	3.71%	3.51%	3.31%
High Duration	4.68%	4.65%	4.40%	4.32%	4.08%	4.19%	3.91%	3.70%	3.58%	3.71%	3.51%	3.31%

Year 2010												
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low Duration	4.30%	4.34%	4.39%	4.34%	4.05%	4.29%	4.32%	4.06%	4.37%	4.42%	4.55%	4.48%
Medium Duration	4.30%	4.34%	4.39%	4.34%	4.05%	4.29%	4.32%	4.06%	4.37%	4.42%	4.55%	4.48%
High Duration	4.30%	4.34%	4.39%	4.34%	4.05%	4.29%	4.32%	4.06%	4.37%	4.42%	4.55%	4.48%