Punjab Pension Fund
Government of Punjab

Report on the Pension Liabilities as at 30.06.2015 covering

Actuarial Assessment,

IPSAS 25 Disclosures and

Funding Strategy

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ABBREVIATIONS

AGP	Accountant General Punjab
GoPb	Government of Punjab
FD	GoPb Finance Department
PAYGO	Pay as you go approach to pension scheme financing
Pension Scheme	Government of Punjab Civil Servants Pension Scheme
PUCM	Projected Unit Credit Method (benefit allocation actuarial method)
IPSAS-25	International Public Sector Accounting Standard 25
PPF	Punjab Pension Fund

1. Executive Summary

The Punjab Pension Fund, established under Punjab Pension Act 2007 and is responsible to help finance a portion of future pension payments, wishes to have an actuarial investigation carried out of the Government of Punjab (GoPb) Pension Scheme liabilities as at the valuation date and understand the factors causing significant changes in it since the previous valuation. In addition the investigation is to determine the disclosures required under International Public Sector Accounting Standard (IPASAS) 25 and assess the appropriateness of the current funding strategy and recommend changes if necessary. Section 2 of this report provides greater detail on the background of the assignment.

The actuarial investigation of GoPb Pension Scheme has been carried out as of June 30, 2015.

The data obtained for the actuarial valuation and its analysis/preparation is discussed in Section 5. More detailed information and analysis relating to active employees is included in Appendix-III and that for current pensioners in Appendix-IV. The data used for the actuarial valuation can be summarized as follows:

Number of Active Employees	Monthly Pensionable Payroll
951,521	Rs.12.763 billion

Type of Pensioners	Number of Pensioners	Monthly Pension Bill
Superannuation + Retiring + Invalid	337,091	Rs.4.508 billion
Family	127,939	Rs.1.150 billion
Total	**465,030**	**Rs.5.658 billion**

The market value of Fund Assets of **Rs.35.309 billion** as of June 30, 2015, was intimated by PPF.

The actuarial method used (i.e. Projected Unit Credit Method) is briefly described in Section 6.

The key assumptions employed in the actuarial valuation are shown in Section 7 and all assumptions are discussed in detail in Appendix-V.

The results of the actuarial valuation as at 30.06.2015, under the current assumptions and benefit structure and those used in the previous valuation are detailed in Sections 8. These can be summarized as follows:

Rs. billion

	Current Valuation Assumptions	Previous Valuation Assumptions
Total Accrued Liability	**3,866.458**	**1,753.616**
Market Value of Assets	**35.309**	35.309
Unfunded Accrued Liability	**3,831.149**	**1,718.307**
Contribution Rate, as % of Pensionable Pays, for future Accrual of Benefits	60.70%	21.50%

The cash-flow projections over the next 30 years are given in Section 8.3.

There are **Rs.35.5 billion** arrears associated with pension increases on commuted portion for those retired before 2001. GoPb has designed a payment plan to pay these arrears. The cash-flow projections include these arrear payments.

There are outstanding pension payments of **Rs.10.661 billion** associated with restoration of commuted portion for those retired after 2001. The cash-flows assume that these remaining arrears after 2015-16 will be paid in three equal annual instalments starting from 2016-17.

A summary of the projected cash-flows is as follows:

Rs. billion

Year	Pensions	Comm.	Arrears	Total Pension Payments	Projected Revenue	Pension Expense as % of Revenue	Projected Expenditure	Pension Expense as % of Expenditure
2015-16	100.070	7.626	-	107.696	982.853	10.957%	730.324	14.746%
2016-17	115.475	24.742	9.011	149.228	1,071.310	13.929%	796.053	18.746%
2017-18	126.160	29.143	17.550	172.853	1,167.728	14.803%	867.698	19.921%
2018-19	150.865	25.425	16.050	192.340	1,272.823	15.111%	945.791	20.336%
2019-20	175.864	29.720	3.550	209.134	1,387.377	15.074%	1,030.912	20.286%
2024-25	291.514	62.339	-	353.853	2,134.652	16.577%	1,586.184	22.308%
2029-30	528.626	95.249	-	623.875	3,284.426	18.995%	2,440.542	25.563%
2034-35	868.128	66.231	-	934.359	5,053.497	18.489%	3,755.077	24.883%
2039-40	1,339.291	89.095	-	1,428.386	7,775.432	18.371%	5,777.652	24.723%
2044-45	2,052.698	158.780	-	2,211.477	11,963.466	18.485%	8,889.636	24.877%

The sensitivity analysis based on different economic assumptions and potential changes in benefits is given in Section 8.4.

IPSAS-25 accounting disclosures are provided under Section10. A summary is as follows:

Accounting Entry	Amount in Rs. billion
Statement of Financial Position (defined benefit liability)	3,831.149
Statement of Financial Performance (defined benefit expense) for 2014-15	436.085
Statement of Financial Performance (defined benefit expense) for 2015-16	480.531

Funding Strategy for GoPb Pension Liability has been discussed and recommended under Section 11.

The findings of the Actuarial Valuation as at 30.06.2015 are as follows:

- The past service accrued liability is **Rs.3,866 billion**.

- The contribution rate, as percentage of pensionable salaries, for future accrual of benefits is **60.7%**.

- The past service liability and contribution rate as at 30th June 2015, based on the assumptions used in 2010 valuation (using current benefit structure except five continuing net pension increases and restoration) are **Rs.1,753.616 billion** and **21.5%** respectively.

- The past service accrued liability and contribution rate has increased significantly as at the current valuation date. The main sources of the increase in liability and future contribution rate are (i) changes in assumptions; (ii) policy of continuing pension increases to future new pensioners at the time of retirement/death; (iii) allowing restoration under 2001 salary package and (iv) change in benefits.

- The increase in liability due to changes in economic assumptions, which is primarily the reduction in differential between the discount rate and future pension increase rate from 4% to 2%, works out to **Rs.367 billion**. This change is required to bring the economic assumptions more in line with unfolding experience and determine the pension liability on a more realistic basis.

- The change in demographic assumptions has increased the liability by **Rs.393 billion**. It is clearly evident from reviewing the past retirement patterns that almost one-third of new retirees are aged below the age of superannuation (i.e. 60 years). This experience cannot be ignored especially since it substantively increases pension liability. In addition, there is worldwide recognition that pension systems must take into account future improvements in mortality otherwise the underlying liability will be underestimated.

- The impact of increasing future net pensions by 72%, at the time the first pension is calculated, has increased the liability by **Rs.666 billion**. This factor was not taken into account in the previous valuation. It increases the liability of active employees and future contribution rate. This policy distorts the basic structure of the pension scheme by breaking the relationship between pensionable pay and the pension amount at retirement/death. Apart from the dramatic increase in accrued liability it produces a contribution rate (of 48.2%) which is unsustainable.

- GoPb has allowed the restoration of commuted portion of gross pension under salary package 2001 in 2014 with retrospective effect. This factor has increased the past service liability by **Rs.686.458 billion** and future contribution rate from 48.2% to 60.7%.

- The cash-flow projections reflect that the pension benefit outgo (**Rs.86 billion** during 2014-15) will increase to **Rs.2,211 billion** after 30 years. However, when the pension expense is compared with expected revenue and expenditure, it can be seen that this percentage increases for the next 15 years and stabilizes thereafter.

- The sensitivity analysis given in Section 8.4 needs to be read carefully and understood completely. It gives possible deviations in the past service liability and future contribution rate from the base results.

- We sincerely hope that the valuation results and the impact shown in sensitivities would provide an insight to the decision makers to understand the financial impact on the pension costs of their relevant decisions.

- The assets of PPF are quite nominal compared to the Pension liabilities. The gap between liabilities and the value of assets is likely to increase in future because the contribution amounts

to the PPF are insignificant as compared to the interest on liability and future required contribution.

- The funding strategy recommended in the previous valuation report was not followed actively during the inter-valuation period and contributions to PPF were paid on adhoc basis.

In view of the level of Pension Expense as percentage of Revenue shown in Section 8.3, it is recommended that:

- Future contributions should be linked to total Revenues at the rate of 1% of Revenues for the next 15 years
- 19% of Revenues be paid to PPF from year 16 onwards;
- The PPF would continue its accumulation stage for 15 years and then start to meet all pension benefit obligations of the GoPb.
- The PPF would maximize the growth of the fund during the accumulation stage and then optimize the management of the cash-flows and any residual assets thereafter during the pension payment stage.

2. Introduction

The Government of Punjab (GoPb) provides pension benefits to retired eligible permanent employees and families of deceased employees and pensioners. In addition to meeting the annual pension benefit payments the GoPb is also making contributions to a reserve fund called the Punjab Pension Fund (PPF).

The Punjab Pension Fund was established under Punjab Pension Act 2007. The basic objective of setting up the PPF was to help finance a portion of future pension payments. Currently, GoPb has been making contributions to PPF on adhoc basis.

PPF wishes to have an actuarial investigation carried to:

i. Assess the present value of Pension liabilities and identify the key factors leading to changes since the last actuarial assessment; assess the impact of key sensitivities on the Pension liability determined; and project the cash-flows of the Pension liability. These objectives are defined in **output (i) of the contract No.PPF/2015-16/01**.

ii. Report on the IPSAS 25 disclosures of the Pension liabilities for the financial year 2015. This objective is defined in **output (iii) of the contract No.PPF/2015-16/01.**

iii. Based on the cash-flows of the Pension liability assess if the current funding strategy remains a valid policy choice or if appropriate revisions to the future funding policy are required. This objective is defined in **output (ii) of the contract No.PPF/2015-16/01**.

3. Date and Purpose of Actuarial Valuation

The Actuarial Valuation of GoPb Pension Scheme has been carried out as of June 30, 2015.

PPF wishes to analyse the Pension Scheme liabilities as at the valuation date and understand the factors causing significant changes in liability and contribution requirements since the previous valuation date of June 30, 2010.

This Report includes and discusses:

- The Actuarial Liability of Pension Benefits for the Employees and Pensioners of Government of Punjab as at the valuation date
- The Contribution Rate, as percentage of Pensionable Salaries, required to fund the future accrual of Pension benefits
- The comparison of current Liability with the Liability determined using previous Valuation basis
- The Cash-Flow projections for the Pension Scheme
- Accounting disclosures for GoPb Pension Scheme as per IPSAS-25
- Funding strategy for the Pension Liability

4. GoPb Pension Scheme

The GoPb Pension Scheme comprises of various rules and regulations notified from time to time which have remained unconsolidated. Each province includes these regulations as part of the service rules for its civil servants. The general practice to-date by the provincial governments has been to replicate the rules and regulations notified by the Federal Government: this is not considered a legal requirement but a custom to maintain consistency amongst the different government employees.

The main provisions of the Pension Scheme relevant to an actuarial analysis are included under Appendix-II.

5. Data for Actuarial Valuation

To carry out an actuarial valuation of a pension scheme, information is required of employees still in active service and those retired[1] and receiving regular monthly pensions. This information is required both in respect of individual employees and pensioners as well as aggregates of the numbers of employees/pensioners and annual payroll/pensions.

In year 2007 the GoPb set up a dedicated fund (PPF) to accumulate assets for the sole purpose of paying pension scheme benefits at some future date: this is a reserve fund and not a pension fund[2]. The amount of assets accumulated in the PPF up to the valuation date was also required for the actuarial valuation.

5.1. Active Employees

There is lack of reliable single source of information on the numbers of active employees and their monthly pensionable payroll. The Consultants derived these numbers by cross referencing various sources of information received from Finance Department (FD) and Accountant General of Punjab (AGP).

The estimated number of active employees and their monthly pensionable payroll assumed in this actuarial valuation are shown in Table 1.

Table 1 Estimated Active Employees and Monthly Pensionable Payroll

Number of Active Employees	Monthly Pensionable Payroll
951,521	Rs.12.763 billion

Source: Consultant's analysis of information form FD and AGP.

The information received from FD and AGP in respect of active employees and the process used to arrive at these estimates is outlined under Appendix-III.

The age, past service[3] and pensionable wage distributions are all required for determining the Pension Scheme costs, liabilities and cash-flows. These factors have a direct relationship on the projected

[1] This included those employees who are deceased but have continuing beneficiaries receiving regular pension payments.

[2] A pension fund is an asset pool which is responsible for paying all future pension obligations. The government contributes to the PPF on an adhoc basis but the PPF is not responsible for meeting annual benefit costs which continue to be charged to GoPb's annual budget.

[3] Past service is the pensionable service rendered up to the valuation date.

retirement/death date and on the amount of expected pension. These distributions were derived from the active employees' data provided by AGP and are shown in Appendix-III.

PPF provided information of the sanctioned strength as of June 30, 2014 and projected sanctioned strength as of June 30, 2016.

The total sanctioned strength of GoPb at the valuation date (30/06/2015) was estimated as average of the above two sanctioned strengths.

In line with the previous valuation assumption, it has been assumed that 12% of sanctioned posts are vacant/non-pensionable posts.

5.2. Current Pensioners

Information of the Pensioners and their Pension amounts at the time of their retirement/death was provided by AGP.

The pension amounts received were projected to the valuation date based on the Pension Increases announced by GoPb between their retirement/death and the valuation date.

The numbers of pensioners by type and their monthly pension bill assumed in this report are shown in Table 2. The information received from AGP in respect of pensioners and the process used to arrive at these estimates is outlined under Appendix-IV.

Table 2 Estimated Current Pensioners and Monthly Pension Bill

Type of Pensioners	Number of Pensioners	Monthly Pension Bill
Superannuation + Retiring + Invalid	337,091	Rs.4.508 billion
Family	127,939	Rs.1.150 billion
Total	**465,030**	**Rs.5.658 billion**

Source: Consultant's analysis of information form AGP.

The split between different types of pensioners and their age distribution are also required for determining the Pension Scheme liabilities and cash-flow projections. Unfortunately, the information received can only be categorized as Family and Other Retirements.

The number of pensioners and their monthly pension bill will continue to have significant subjectivity attached until all the pensioners are added to the pensioner database and it reflects the current monthly pension entitlement.

5.3. Pension Scheme Assets

The information provided in respect of the distribution of Pension Fund Assets between different asset classes is shown in Table 3.

Table 3 Distribution of Pension Fund Assets

	30 June 2015	
	Amount in Rs. Million	**% of Total Fund**

PIBs	7,788	23.2
Short term bank deposits	8,100	24.1
Corporate bonds/TFCs	559	1.7
Cash at bank	183	0.5
National Savings	16,286	48.4
Accrued Markup	670	2.0
Other assets*	42	0.1
Total Fund Size	**33,628**	**100.0**

*Other assets include prepaid expenses for management of PPF and book value of fixed assets (vehicles, computers etc.) of PPF.

The market value of Fund Assets intimated as of June 30, 2015 was **Rs.35.309 billion**.

6. Actuarial Method

The Actuarial Method used to determine the past service liabilities and contribution rate is called the Projected Unit Credit Method (PUCM). This method is also mandated by the International Public Sector Accounting Standard 25 (IPSAS-25).

PUCM is the most widely used benefit allocation actuarial method. The method *allocates the projected pension benefit uniformly over the years of total service* rendered. The actuarial present value as at the valuation date of one year's benefit summed for all active employees is termed the "Current Service Cost (CSC)". In a funded scheme it represents the amount required as new contribution to the scheme to meet the benefits arising from the year immediately following the valuation date. It is usual to express CSC as a percentage of pensionable earnings since the rupee amount will invariably increase due to wage increases but as a percentage it is likely to remain relatively stable.

The sum of the actuarial present value of benefits accrued up to the valuation date summed for all active employees and the actuarial present value of future benefit payments summed for all current pensioners is the Past Service Accrued Liability. Under a fully funded financing approach this Accrued Liability would be offset by matching assets that would have accumulated from past contributions and profit earned thereon.

7. Assumptions

The discussion on assumptions required to carry out Actuarial Valuation of GoPb Pension Scheme is contained in Appendix-V.

A summary of the economic assumptions (which generally have greater material impact) is shown in Table 4. The demographic assumptions, which are more of technical nature, can be viewed in the appendix.

Table 4 Summary of Economic Assumptions

Parameter	Nominal Rate Assumed	Real Rate Assumed
Inflation	8.0%	

Discount Rate	10.0%	2.0%
Wage Inflation	9.0%	1.0%
Pension Inflation	8.0%	0.0%
Minimum Pension Inflation	8.0%	0.0%

Source: Consultant's analysis and assessment.

The economic assumptions used in the previous valuation as at June 30, 2010 were as follows:

Parameter	Nominal Rate Assumed	Real Rate Assumed
Inflation	10.0%	
Discount Rate	12.0%	2.0%
Wage Inflation	11.0%	1.0%
Pension Inflation	8.0%	-2.0%
Minimum Pension Inflation	8.0%	-2.0%

The differences between the economic assumptions are critical for the actuarial valuation of Pension benefits. The most important differences in this respect are between:

- discount rate and salary increase rate
- discount rate and pension increase rate

Any changes in these gaps can generate significant gain/loss during the inter-valuation period.

	2015	2010
Difference between Discount rate & Salary increase rate	1.0%	1.0%
Difference between Discount rate & Pension increase rate	2.0%	4.0%

The differential between discount rate and salary increase rate as at 30.06.2015 is one percentage point (1%) which is consistent with previous valuation assumptions.

The differential between discount rate and pension increase rate as at 30.06.2015 is 2 percentage points which was 4% in the previous valuation. This reduction has increased the liability and pension cost of both actives and pensioners.

8. Results

The results of the actuarial valuation of the GoPb Pension Scheme based on assumptions listed in Section 7 and using the Projected Unit Credit method described in Section 6 are presented in this section.

8.1. Liability & Contribution Rate as at 30.06.2015

Past Service Actuarial Liability, Deficit Position and Contribution Rate, as percentage of Pensionable Salaries, associated with future accrual of benefits are as follows:

Rs. billion

		30.06.2015
Liability of Active Employees		
	Normal & Early Retirement Benefits	1,964.906
	Invalid	52.545
	Family	223.660
	Total Actives' Liability	**2,241.111**
Pensioners' Liability		
	Retirements (Normal/Early/Invalid)	1,055.095
	Family	570.252
	Total Pensioners' Liability	**1,625.347**
Total Accrued Liability		**3,866.458**
Market Value of Assets		**35.309**
Unfunded Accrued Liability		**3,831.149**
Contribution Rate, as % of Pensionable Pays, for future Accrual of Benefits		60.70%

8.2. Change in Liability & Contribution Requirements

Past Service Actuarial Liability and Contribution Rate has significantly increased during the inter-valuation period. The major sources of these increases are as follows:

- GoPb, in line with the Federal and other provincial governments, not only entitles pension increases to its existing pensioners but also future pensioners as and when they become entitled. Currently this approach applies to five previous pension increases.

- Restoration of commuted portion of the Pension has been restored for those who opted 2001 Salary Package.

- Change in economic assumptions – the reduction in critical differential between discount rate and pension increase rate from 4% (used in the valuation as at 30.06.2010) to 2% (current valuation assumption)

- Change in demographic assumptions – current valuation assumes early retirements and future mortality improvements whereas these factors were not included in the previous valuation

- Changes in Pension benefits (such as 75% of gross pension payable to spouse, continuation of pension to widow/divorced daughter, divorced sister etc.)

To understand the increase in liability and contribution rate, we have carried out actuarial valuations for different scenarios and the results are presented in the following tables.

Scenario-1: Valuation Results as of 30.06.2015 based on financial and demographic assumptions used in Actuarial Valuation as at 30.06.2010 (excluding five pension increases & restoration) are as follows:

Rs. billion

	30.06.2015
Liability of Active Employees	
Normal & Early Retirement Benefits	662.252
Invalid	13.753
Family	141.923
Total Actives' Liability	**817.928**
Pensioners' Liability	
Retirements (Normal/Early/Invalid)	603.609
Family	332.079
Total Pensioners' Liability	**935.688**
Total Accrued Liability	**1,753.616**
Market Value of Assets	35.309
Shortfall in the Fund	**1,718.307**
Contribution Rate, as % of Pensionable Pays, for future Accrual of Benefits	21.50%

Scenario-2: Valuation Results as of 30.06.2015, based on revised financial assumptions (differential between discount rate and pension increase rate is reduced to 2%) and benefits same as that of used in Scenario-1, are as follows:

Rs. billion

	30.06.2015
Liability of Active Employees	
Normal & Early Retirement Benefits	761.558
Invalid	17.644
Family	205.261
Total Actives' Liability	**984.463**
Pensioners' Liability	
Retirements (Normal/Early/Invalid)	710.958
Family	425.610
Total Pensioners' Liability	1,136.568
Total Accrued Liability	**2,121.031**
Market Value of Assets	35.309
Shortfall in the Fund	**2,085.722**
Contribution Rate, as % of Pensionable Pays, for future Accrual of Benefits	26.30%

Scenario-3: Valuation Results as of 30.06.2015, based on revised financial and demographic assumptions (early retirement and mortality improvement assumptions introduced) and benefits same as that of used in Scenario-1, are as follows:

Rs. billion

		30.06.2015
Liability of Active Employees		
	Normal & Early Retirement Benefits	1,047.213
	Invalid	24.222
	Family	89.070
	Total Actives' Liability	**1,160.505**
Pensioners' Liability		
	Retirements (Normal/Early/Invalid)	892.893
	Family	460.347
	Total Pensioners' Liability	**1,353.240**
Total Accrued Liability		**2,513.745**
Market Value of Assets		35.309
Shortfall in the Fund		**2,478.436**
Contribution Rate, as % of Pensionable Pays, for future Accrual of Benefits		30.60%

Scenario-4: Valuation Results as of 30.06.2015 based on revised financial/demographic assumptions and incorporating the impact of the five continuing net pension increases (equal to 72% of net pension) to future pensioners are as follows:

Rs. billion

		30.06.2015
Liability of Active Employees		
	Normal & Early Retirement Benefits	1,631.896
	Invalid	41.663
	Family	153.201
	Total Actives' Liability	**1,826.760**
Pensioners' Liability		
	Retirements (Normal/Early/Invalid)	892.893
	Family	460.347
	Total Pensioners' Liability	**1,353.240**
Total Accrued Liability		**3,180.000**
Market Value of Assets		35.309
Shortfall in the Fund		**3,144.691**
Contribution Rate, as % of Pensionable Pays, for future Accrual of Benefits		48.20%

Scenario-5: Valuation Results as of 30.06.2015 based on revised financial/demographic assumptions, five continuing net pension increases and incorporating the impact of restoration of commuted potion of gross pension are as follows:

Rs. billion

	30.06.2015
Liability of Active Employees	
Normal & Early Retirement Benefits	1,964.906
Invalid	52.545
Family	223.660
Total Actives' Liability	**2,241.111**
Pensioners' Liability	
Retirements (Normal/Early/Invalid)	1,055.095
Family	570.252
Total Pensioners' Liability	**1,625.347**
Total Accrued Liability	**3,866.458**
Market Value of Assets	**35.309**
Shortfall in the Fund	**3,831.149**
Contribution Rate, as % of Pensionable Pays, for future Accrual of Benefits	60.70%

8.3. Cash-Flow Projections

The estimated Pension benefit payments over the next 30 years and their ratios as percentage of Expected Revenue and Expected Expenditure are given in the following table.

Keeping in view the fact that Revenue, Expenditure, Salaries and Pensions move hand in hand, it has been deemed appropriate to assume that long-term growth in Revenue and Expenditure would be 9% per annum. This assumption is consistent with the Salary growth rate.

There are **Rs.35.5 billion** arrears associated with pension increases on commuted portion for those retired before 2001. GoPb has designed a payment plan to pay these arrears. Following cash-flow projections include these arrear payments.

There are outstanding pension payments of **Rs.10.661 billion** associated with restoration of commuted portion for those retired after 2001. The following cash-flows assume that the remaining arrears after 2015-16 will be paid in three equal annual instalments starting from 2016-17.

Rs. billion

Year	Pensions	Comm.	Arrears	Total Pension Payments	Projected Revenue	Pension Expense as % of Revenue	Projected Expenditure	Pension Expense as % of Expenditure
2015-16	100.070	7.626	-	107.696	982.853	10.957%	730.324	14.746%
2016-17	115.475	24.742	9.011	149.228	1,071.310	13.929%	796.053	18.746%
2017-18	126.160	29.143	17.550	172.853	1,167.728	14.803%	867.698	19.921%
2018-19	150.865	25.425	16.050	192.340	1,272.823	15.111%	945.791	20.336%
2019-20	175.864	29.720	3.550	209.134	1,387.377	15.074%	1,030.912	20.286%
2020-21	186.042	33.341	-	219.383	1,512.241	14.507%	1,123.694	19.523%
2021-22	207.156	37.634	-	244.790	1,648.343	14.851%	1,224.826	19.986%
2022-23	231.248	45.623	-	276.871	1,796.694	15.410%	1,335.060	20.738%
2023-24	259.268	54.685	-	313.953	1,958.396	16.031%	1,455.215	21.574%
2024-25	291.514	62.339	-	353.853	2,134.652	16.577%	1,586.184	22.308%
2025-26	328.238	71.659	-	399.897	2,326.770	17.187%	1,728.941	23.130%
2026-27	369.970	78.895	-	448.865	2,536.180	17.698%	1,884.546	23.818%
2027-28	417.259	80.531	-	497.790	2,764.436	18.007%	2,054.155	24.233%
2028-29	469.838	91.180	-	561.018	3,013.235	18.618%	2,239.029	25.056%
2029-30	528.626	95.249	-	623.875	3,284.426	18.995%	2,440.542	25.563%
2030-31	590.829	87.943	-	678.772	3,580.025	18.960%	2,660.191	25.516%
2031-32	654.186	76.060	-	730.247	3,902.227	18.714%	2,899.608	25.184%
2032-33	720.615	76.839	-	797.454	4,253.427	18.748%	3,160.573	25.231%
2033-34	792.232	76.315	-	868.547	4,636.236	18.734%	3,445.025	25.212%
2034-35	868.128	66.231	-	934.359	5,053.497	18.489%	3,755.077	24.883%
2035-36	948.527	66.988	-	1,015.515	5,508.312	18.436%	4,093.034	24.811%
2036-37	1,034.972	67.188	-	1,102.160	6,004.060	18.357%	4,461.407	24.704%
2037-38	1,128.057	71.824	-	1,199.881	6,544.425	18.334%	4,862.934	24.674%
2038-39	1,228.978	82.080	-	1,311.058	7,133.424	18.379%	5,300.598	24.734%
2039-40	1,339.291	89.095	-	1,428.386	7,775.432	18.371%	5,777.652	24.723%
2040-41	1,460.904	114.838	-	1,575.741	8,475.221	18.592%	6,297.641	25.021%
2041-42	1,592.515	113.892	-	1,706.407	9,237.991	18.472%	6,864.429	24.859%
2042-43	1,733.447	136.926	-	1,870.373	10,069.410	18.575%	7,482.228	24.998%
2043-44	1,887.597	153.907	-	2,041.504	10,975.657	18.600%	8,155.629	25.032%
2044-45	2,052.698	158.780	-	2,211.477	11,963.466	18.485%	8,889.636	24.877%

8.4. Sensitivity Analysis

The actuarial liabilities of Pension benefits are based on a number of economic and demographic assumptions.

Generally, the economic assumptions have greater financial impact on the actuarial valuation results as compared to demographic assumptions.

In order to test the financial significance of economic assumptions and the impact of continuing past trend of salary increases, we have conducted the following sensitivity analyses:

- Determined past service liability and future contribution rate (as percentage of pensionable salaries) by increasing discount rate by one percentage point (i.e. 11%) and keeping all other assumptions unchanged.

- Determined past service liability and future contribution rate (as percentage of pensionable salaries) by decreasing discount rate by one percentage point (i.e. 9%) and keeping all other assumptions unchanged.

- Determined past service liability and future contribution rate (as percentage of pensionable salaries) by increasing salary growth rate by one percentage point (i.e. 10%) and keeping all other assumptions unchanged.

- Determined past service liability and future contribution rate (as percentage of pensionable salaries) by decreasing salary growth rate by one percentage point (i.e. 8%) and keeping all other assumptions unchanged.

- Determined past service liability and future contribution rate (as percentage of pensionable salaries) by increasing pension growth rate by one percentage point (i.e. 9%) and keeping all other assumptions unchanged.

- Determined past service liability and future contribution rate (as percentage of pensionable salaries) by decreasing pension growth rate by one percentage point (i.e. 7%) and keeping all other assumptions unchanged.

- Determined past service liability and future contribution rate (as percentage of pensionable salaries) by increasing salary growth rate by 4.5 percentage points (i.e. 13.5%) and keeping all other assumptions unchanged. The average salary increase during the inter-valuation period of 5 years was 13.5%. This salary increase is calculated for the common employees present in the valuation data at both valuation dates.

The results of the above sensitivities are summarized in the following table:

	Past Service Liability (Rs. Billion)	**Contribution Rate as % of Pensionable Pay**
Base Results	3,866.458	60.70%
Discount Rate ***Less*** by 1.0%	4,700.272	81.10%
Discount Rate ***Plus*** by 1.0%	3,236.928	46.47%
Salary Growth Rate ***Less*** by 1.0%	3,690.157	54.53%
Salary Growth Rate ***Plus*** by 1.0%	4,077.244	69.26%
Pension Growth Rate ***Less*** by 1.0%	3,401.734	52.64%
Pension Growth Rate ***Plus*** by 1.0%	4,455.614	72.41%
Salary Growth Rate ***Plus*** by 4.5%	5,102.571	118.13%

The percentage increase/(decrease) in past service liability and contribution rate for sensitivities as compared to base results, are presented in the following table:

	Past Service Liability (Rs. Billion)	**Contribution Rate as % of Pensionable Pay**
Base Results	0.0%	0.0%
Discount Rate ***Less*** by 1.0%	21.57%	33.61%
Discount Rate ***Plus*** by 1.0%	-16.28%	-23.44%
Salary Growth Rate ***Less*** by 1.0%	-4.56%	-10.16%
Salary Growth Rate ***Plus*** by 1.0%	5.45%	14.10%
Pension Growth Rate ***Less*** by 1.0%	-12.02%	-13.28%
Pension Growth Rate ***Plus*** by 1.0%	15.24%	19.29%
Salary Growth Rate ***Plus*** by 4.5%	31.97%	94.61%

9. Observations and Conclusions

1. The actuarial valuation of GoPb Pension Scheme reveals that the past service accrued liability is **Rs. 3,866 billion** as at 30.06.2015.

2. The contribution rate, as percentage of pensionable salaries, for future accrual of benefits is **60.7%** as at the valuation date.

3. The previous valuation was conducted 5 years back (i.e. as of June 30, 2010).

4. The past service liability and contribution rate as at 30th June 2015, based on the assumptions used in 2010 valuation (using current benefit structure except five continuing net pension increases and restoration) are **Rs.1,753.616 billion** and **21.5%** respectively.

5. The past service accrued liability and contribution rate has increased significantly as at the current valuation date. The main sources of the increase in liability and future contribution rate are (i) changes in assumptions; (ii) policy of continuing pension increases to future new pensioners at the time of retirement/death; (iii) allowing restoration under 2001 salary package and (iv) change in benefits.

6. The increase in liability due to changes in economic assumptions, which is primarily the reduction in differential between the discount rate and future pension increase rate from 4% to 2%, works out to **Rs.367 billion**. This change is required to bring the economic assumptions more in line with unfolding experience and determine the pension liability on a more realistic basis.

7. The change in demographic assumptions has increased the liability by **Rs.393 billion**. It is clearly evident from reviewing the past retirement patterns that almost one-third of new retirees are aged below the age of superannuation (i.e. 60 years). This experience cannot be ignored especially since it substantively increases pension liability. In addition, there is worldwide recognition that pension systems must take into account future improvements in mortality otherwise the underlying liability will be underestimated.

8. The impact of increasing future net pensions by 72%, at the time the first pension is calculated, has increased the liability by **Rs.666 billion**. This factor was not taken into account in the previous valuation. It increases the liability of active employees and future contribution rate. This policy distorts the basic structure of the pension scheme by breaking the relationship between pensionable pay and the pension amount at retirement/death. Apart from the dramatic increase in accrued liability it produces a contribution rate (of 48.2%) which is unsustainable.

9. GoPb has allowed the restoration of commuted portion of gross pension under salary package 2001 in 2014 with retrospective effect. This factor has increased the past service liability by **Rs.686.458 billion** and future contribution rate from 48.2% to 60.7%.

10. The cash-flow projections reflect that the pension benefit outgo (**Rs.86 billion** during 2014-15) will increase to **Rs.2,211 billion** after 30 years. However, when the pension expense is compared with expected revenue and expenditure, it can be seen that this percentage increases for the next 13 years and stabilizes thereafter.

11. Actuarial valuation results are highly sensitive to the valuation assumptions, especially the economic assumptions. A sensitivity analysis has been conducted to understand the financial significance of the underlying economic assumptions. The findings of this analysis are as follows:

- a 1% reduction in the discount rate causes a 21.6% increase in the PVDBO and 33.6% increase in the CSC. In the reverse scenario, a 1% increase in the discount rate results in 16.3% reduction in PVDBO and to 23.4% reduction in CSC.

- a 1% reduction in the salary growth rate causes a 4.6% reduction in the PVDBO and 10.2% reduction in the CSC. In the reverse scenario, a 1% increase in the salary growth rate results in 5.5% increase in PVDBO and to 14.1% increase in CSC.

- a 1% reduction in the pension growth rate causes a 12.0% reduction in the PVDBO and 13.3% reduction in the CSC. In the reverse scenario, a 1% increase in the pension growth rate results in 15.2% increase in PVDBO and to 19.3% increase in CSC.

12. GoPb has provided significant salary increases in the past and also merged various allowances in the pensionable pay. The information of common employees in valuation data as of 30th June 2010 and 30th June 2015 reflect an average salary increase of 13.5% per annum. We have generated valuation results assuming 13.5% annual growth in pensionable salaries in future. The past service accrued liability and future required contribution rate work out to Rs.**5,102.571** billion and 118.1% of pensionable salaries respectively.

13. There are **Rs.35.5 billion** arrears associated with pension increases on commuted portion for those retired before 2001. GoPb has designed a payment plan to pay these arrears. The cash-flow projections include these arrear payments.

14. There are outstanding pension payments of **Rs.10.661 billion** associated with restoration of commuted portion for those retired after 2001. The cash-flows assume that the remaining arrears after 2015-16 will be paid in three equal annual instalments starting from 2016-17.

15. We sincerely hope that the valuation results and the impact shown in sensitivities would provide an insight to the decision makers to understand the financial impact on the pension costs of their relevant decisions.

16. The assets of PPF are quite nominal compared to the Pension liabilities. The gap between liabilities and the value of assets is likely to increase in future because the contribution amounts to the PPF are insignificant as compared to the interest on liability and future required contribution.

17. If GoPb wishes PPF to make partial/full benefit payments from the Fund assets in future, it has to make regular contributions on a predefined rate of pensionable salary to PPF so that the Fund could achieve the targeted level as early as possible.

10. International Public Sector Accounting Standard-25

10.1. Basic Principles of Accounting

Overtime some core principles have become common in all international accounting approaches. Accounting is done assuming the entity is a "going-concern". This means that unless there is an irrevocable time bound process in place for liquidation of part or all of the entity, it will be assumed that all activities will continue in the future as in past periods. This approach has led to concept of "constructive obligation" being introduced. This requires an entity to account not only for its legal obligation under the formal terms of a defined benefit plan, but also for any constructive obligation that arises from the entity's informal practices. Informal practices give rise to a constructive obligation where the entity has no realistic alternative but to pay.

Accounting is done using "accrual" basis. This means that an entity entering into any contract must recognize the costs arising from that contract over the period during which it will obtain economic benefits or undertake economic activities to fulfil its obligations. Thus, cost recognition is not dependent on timing of payments. It is now universally recognized that accounting on "cash" only basis does not present the true financial impact of many activities including costs of pension and other post-employment schemes for employees.

Measurement of transactions is based on "market value" or "fair value" principles. This means that the value assigned to any liability is such that a willing buyer would be prepared to purchase in a free market. Similarly, the value assigned to any asset is such that a willing seller would be prepared to accept in a free market.

10.2. IPSAS-25

Each economy has organized the guiding principles and allowed or required accounting and reporting practices into various accounting standards which must be complied with by enterprises carrying out business activities.

An international independent standard-setting board (the International Accounting Standards Board - IASB), appointed and overseen by a geographically and professionally diverse group of Trustees has also evolved. Its mission is to develop, in the public interest, a single set of high quality and understandable international financial reporting standards[4] (IFRSs) for general purpose financial statements.

In view of globalization and also to avoid unnecessary duplication of effort most developing economies adopt various IASs/IFRs, with or without modification, as their national accounting standards. Pakistan too has adopted many of the international standards over the years including IAS-19 (in 1986) which addresses accounting and disclosure requirements in respect of all employee benefits. Public listed companies are mandated to comply with all standards notified by the Security and Exchange Commission and increasingly private limited companies are also being required to comply.

A second international organization (International Federation of Accountants - IFAC) formulates standards (International Public Sector Accounting Standards) appropriate for public sector entities. The

[4] Standards issued by IASB between 1973 and 2001 were called International Accounting Standard (IAS). Those issued after 2001 are called International Financial Reporting Standard (IFRS).

organization is a private federation that is promoted and financed by IMF and World Bank. Adoption of formulated standards is purely on voluntary basis.

IPSAS-25 is the equivalent of IAS-19 having the same scope and generally speaking containing the same measurement and disclosure requirements. Some governments have adopted IAS-19 to determine and account the costs of civil service pension schemes: an example is the UK whose financial reporting manual can be accessed using the link http://www.hm-treasury.gov.uk/frem_index.htm. Others have adopted IPSAS-25 for this purpose; an example is Ireland which carried out a review of its civil service pension scheme that can be accessed using the link http://www.audgen.gov.ie/viewdoc.asp?DocID=1176.

GoPb also follows IPSAS 25 for reflecting Pension liabilities in its financial statements.

10.3. Data and Assumptions

The valuation data used is same as given in Section 5. The valuation assumptions used are same as given in Section 7.

10.4. Statement of Financial Position

The amount to be recognized as the net defined benefit liability for the GoPb Pension Scheme as at 30 June 2015 is Rs.3,831.149 billion, derived as follows:

Rs. billion

	30.06.2015
Present Value of a Defined Benefit Obligation (PVDBO)	**3,866.458**
Plus Actuarial Gains (*less* Actuarial Losses) not yet recognised	**-**
Minus Past Service Cost (PSC) not yet recognized	**-**
Minus Fair Value of Plan Assets	**35.309**
Amount to be recognised as a defined benefit liability	**3,831.149**

10.5. Statement of Financial Performance

The amount to be recognized as a defined benefit expense for the GoPb Pension Scheme in the financial year 2014-2015 is Rs.436.085 billion, derived as follows:

Rs. billion

	2014-15
Current Service Cost	**92.965**
Plus Interest Cost	**345.845**
Minus Expected Return on Plan Assets	**(2.725)**
Plus Actuarial Losses/(Gains)	**-**
Plus Past Service Cost (PSC)	**-**
Minus Curtailments and/or ***Plus*** Settlements Effect	**-**
Amount to be Recognized as a Defined Benefit Expense	**436.085**

10.6. Estimated Statement of Financial Performance for the Next Year

The estimated amount to be recognized as a defined benefit expense for the GoPb Pension Scheme in the financial year 2015-2016 is Rs.480.531 billion, derived as follows:

Rs. billion

	2015-16
Current Service Cost	**102.346**
Plus Interest Cost	**381.716**
Minus Expected Return on Plan Assets	**(3.531)**
Plus Actuarial Losses/(Gains)	**-**
Plus Past Service Cost (PSC)	**-**
Minus Curtailments and/or ***Plus*** Settlements Effect	**-**
Amount to be Recognized as a Defined Benefit Expense	**480.531**

10.7. Other Disclosures

Other disclosures required under IPSAS-25 are given as follows:

- **Gains/Losses Recognition Policy-** Actuarial Valuation of GoPb Pension Scheme is generally carried out after 3/5 years. Similarly IPSAS-25 disclosures are prepared after the same duration. Therefore, it has been deemed appropriate to recognize gains/losses through statement of net asset/equity. This approach is consistent with the provisions of IPSAS-25 for the recognition of actuarial gains/losses.

Rs. billion

	2014-15
Opening Actuarial (Gains)/Losses	**-**
(Gains)/Losses on PVDBO	**12.311**
(Gains)/Losses on Plan Assets	**(2.834)**
Gains/(Losses) recognized in Asset/Equity	**(9.477)**
Closing Actuarial (Gains)/Losses	**-**

- The Pension Scheme is of a "defined benefit"[5] type and the Standard requires that such schemes must be analysed using a specific actuarial methodology.

  The pension benefit formula allows only 30 years of service to be counted towards pension calculation. The Standard requires that for such schemes the full accrued pension liability should be recognized by the time an employee completes 30 years of service. Thus, only those employees with less than 30 years of service give rise to current service costs (see paragraphs 80 to 84 of IPSAS-25).

  The pension formula is based on final wages at retirement or death. The Standard requires that future wage increases be taken into account in measuring liabilities and costs benefits.

[5] Defined Benefit type schemes are those where the amount of benefit is determined using a formula, usually linked to years of service and wage history (this is only by convention). The alternative type of scheme is of Defined Contribution where the benefits are purely based on contributions made and investment earnings derived from them.

Pensions are indexed (adjusted for inflation) on an ad-hoc basis. However, there is a clear history of such increases and the Standard requires that this leads to a constructive obligation that should be taken into account while measuring projected benefits.

Recent practice of certain past pension increases continuing to be applicable to new retirees has introduced a significant legal obligation that must be taken into account while determining the liabilities and costs under the Standard.

- Reconciliation of opening and closing balances of the present value of the defined benefit obligation:

Rs. billion

	2014-15
Opening Present Value of Defined Benefit Obligation	**3,501.556**
Current Service Cost	**92.965**
Interest Cost	**345.845**
Past Service Cost	**-**
Benefits paid	**(86.219)**
Curtailments and/or Settlements	**-**
Actuarial Losses/(Gains)	**12.311**
Closing Present Value of Defined Benefit Obligation	**3,866.458**

Opening PVDBO has been estimated from the valuation data received as of 30th June 2015, assuming similar benefit structure on both opening and closing dates.

- Reconciliation of opening and closing balances of the fair value of plan assets:

Rs. billion

	2014-15
Opening Fair Value of Plan Assets	**24.750**
Contribution s paid	**5.000**
Expected Return on Plan Assets	**2.725**
Benefits paid	**-**
Actuarial (Losses)/Gains	**2.834**
Closing Fair Value of Plan Assets	**35.309**

- The results of the actuarial valuation are sensitive to the assumptions used. The assumptions that have greatest financial significance are the economic assumptions e.g. the discount rate, salary growth rate and pension growth rate.

The actuarial valuation was reworked by changing these critical assumptions in both directions. The impact of changes in these critical assumptions on the PVDBO and CSC is summarized in the following table.

	PVDBO (Rs. Billion)	**CSC as % of Pensionable Pay**
Base Results	3,866.458	60.70%
Discount Rate ***Less*** by 1.0%	4,700.272	81.10%
Discount Rate ***Plus*** by 1.0%	3,236.928	46.47%
Salary Growth Rate ***Less*** by 1.0%	3,690.157	54.53%
Salary Growth Rate ***Plus*** by 1.0%	4,077.244	69.26%
Pension Growth Rate ***Less*** by 1.0%	3,401.734	52.64%
Pension Growth Rate ***Plus*** by 1.0%	4,455.614	72.41%

The results show that:

- a 1% reduction in the discount rate causes a 21.6% increase in the PVDBO and 33.6% increase in the CSC. In the reverse scenario, a 1% increase in the discount rate results in 16.3% reduction in PVDBO and to 23.4% reduction in CSC.

- a 1% reduction in the salary growth rate causes a 4.6% reduction in the PVDBO and 10.2% reduction in the CSC. In the reverse scenario, a 1% increase in the salary growth rate results in 5.5% increase in PVDBO and to 14.1% increase in CSC.

- a 1% reduction in the pension growth rate causes a 12.0% reduction in the PVDBO and 13.3% reduction in the CSC. In the reverse scenario, a 1% increase in the pension growth rate results in 15.2% increase in PVDBO and to 19.3% increase in CSC.

These sensitivity tests demonstrate the significance of the economic assumptions on both the accrued liability (PVDBO) and the annual accrual of additional liability (CSC).

11. Funding Strategy

11.1. Previous Strategy

Following funding strategy was approved and described in the previous valuation report. However, this strategy was not followed actively during the inter-valuation period and contributions to PPF were paid on adhoc basis:

- Annual contribution of Rs.2 billion each during 2010-11 & 2011-12, Rs.3 billion each during 2012-13 & 2013-14, Rs.4 billion during 2014-15 would be made to the Pension Fund (i.e. the next 5 years);
- No payments would be made from the Fund during the accumulation period;
- After accumulation period, 5% of Basic Salaries will be contributed annually to the Fund; and
- The Fund will begin to meet pension payments from the total investment income earned on the accumulated capital and annual contributions from year 2015-16 onwards.

11.2. Recommended Strategy

The main objective of any funding strategy should be to achieve fully funded position for the Pension Fund as early as possible. Then all budgetary allocation for Pension benefits (based on actuarial advice) would be transferred to Punjab Pension Fund and the benefits would be paid directly from the Fund.

It would be more prudent that all pension payments be routed through PPF. However, this policy should be adopted once the value of PPF assets become significantly higher than one year's expected pension expense.

It is also advisable that contributions to PPF during the accumulation period should be a certain percentage of Revenue and not Salaries because it will be simple to understand and easy to determine.

In view of the level of Pension Expense as percentage of Revenue shown in Section 8.3, we recommend:

- Future contributions should be linked to total Revenues at the rate of 1% of Revenues for the next 15 years;
- 19% of Revenues be paid to PPF from year 16 onwards;
- The PPF would continue its **accumulation stage for 15 years** and then start to **meet all pension benefit obligations** of the GoPb.
- The PPF would maximize the growth of the fund during the accumulation stage and then optimize the management of the cash-flows and any residual assets thereafter during the pension payment stage.

This approach is in line with international practice with respect to financing of government pensions.

With this approach the Government can establish a more stable flow of contributions to the PPF to meet all future pension scheme expenditures.

The expected cash-flows and the estimated value of PPF assets under the recommended funding strategy would be as follows:

Year	Opening Value of Fund	Interest Income	Benefit Payments from Revenue	Contribution to PPF	Payment from PPF	Closing Value of Fund
2016-17	38.840	4.420	149.228	10.713	-	53.973
2017-18	53.973	5.981	172.853	11.677	-	71.631
2018-19	71.631	7.800	192.340	12.728	-	92.159
2019-20	92.159	9.910	209.134	13.874	-	115.942
2020-21	115.942	12.350	219.383	15.122	-	143.415
2021-22	143.415	15.166	244.790	16.483	-	175.064
2022-23	175.064	18.405	276.871	17.967	-	211.436
2023-24	211.436	22.123	313.953	19.584	-	253.142
2024-25	253.142	26.382	353.853	21.347	-	300.870
2025-26	300.870	31.250	399.897	23.268	-	355.389
2026-27	355.389	36.807	448.865	25.362	-	417.557
2027-28	417.557	43.138	497.790	27.644	-	488.340
2028-29	488.340	50.341	561.018	30.132	-	568.813
2029-30	568.813	58.523	623.875	32.844	-	660.180
2030-31	660.180	67.808	678.772	35.800	-	763.789
2031-32	763.789	76.938	-	741.423	730.247	851.903
2032-33	851.903	85.725	-	808.151	797.454	948.326
2033-34	948.326	95.449	-	880.885	868.547	1,056.113
2034-35	1,056.113	106.902	-	960.164	934.359	1,188.820
2035-36	1,188.820	120.435	-	1,046.579	1,015.515	1,340.319
2036-37	1,340.319	135.962	-	1,140.771	1,102.160	1,514.893
2037-38	1,514.893	153.667	-	1,243.441	1,199.881	1,712.119
2038-39	1,712.119	173.427	-	1,355.351	1,311.058	1,929.838
2039-40	1,929.838	195.431	-	1,477.332	1,428.386	2,174.215
2040-41	2,174.215	219.149	-	1,610.292	1,575.741	2,427.914
2041-42	2,427.914	245.232	-	1,755.218	1,706.407	2,721.958
2042-43	2,721.958	274.337	-	1,913.188	1,870.373	3,039.109
2043-44	3,039.109	306.104	-	2,085.375	2,041.504	3,389.084
2044-45	3,389.084	341.987	-	2,273.059	2,211.477	3,792.653

Appendix-I: Copy of Pension Calculation by AGP

Service 2-11-2015
4-3-1988
28-7-27

Pension-IV

Name: Mr. Abdul Rashid
S/O, Wd/o Mishri Khan
Age / Class of Pension. Super
Department: No. SOW-11(SO GAD)6-13/2014
Dt. 3-11-2015 SO GAD

D.O.B: 3-11-1955
D.O.R/Death 2-11-2015
D.O.A. 4-3-1988
N.Q.S: D M Y
E.O.L: 28 - 7 - 27

Personal No. 30081867
DDO Code
Designation. Chief Comptroller
BPS No. 20
CNIC NO.

Basic Pay: 77205-0
Per. Pay:
N. Increment: 3050-
Total Pay 80255-0

Address: ----------

G. Pen = 80255 x 28 x 7 / 300 = 52433-26

35 % = 18351-64
65 % = 34081-62
Rate:

Recovery (If any):
Pay & Alw of 3-11-2015 to 30-11-2015
@Rs = 126226-0 P.M. 27 Dys Nov. = 113603-39

Comm. = 18351-64 x 12 x 12.3719 = 2724536-00

Age.

Net Pension: = 34081-62
1-7-2010 15 %= 5112-24
1-7-2011 15 %= 5879-08
1-7-2013 10 %= 4507-29
1-7-2014 10%= 4958-02
1-7-2015 7.5%= 4090-36
= 58628-63
Medical 20 % / ~~25 %~~= 6816-32
25% Increase on M.A. 1704-08
Medical= = 67149-03

PPO No. ----------

27 Dys Nov. = 60434-13
Dec. = 67149-03
127583-16

AO AO

Appendix-II: GoPb Civil Service Pension Scheme Summary

The GoPb Pension Scheme provides for the following types of pensions

- **Superannuation Pension:** paid to government worker retiring on attaining 60 years of age.
- **Invalid Pension:** paid to government worker who retires when certified as being unable to continue in his post due to permanent incapacitation resulting from physical or mental infirmity.
- **Compensation Pension:** paid to government worker who is discharged due to abolition permanent post or a change in the nature of the duties of the post.
- **Retiring Pension:** paid to a government worker who opts to retire or is compulsorily retired after completing 25 years of "qualifying service"[6] but before reaching age of superannuation.
- **Family Pension:** paid to "family" of deceased government worker or government pensioner, as the case maybe.

The **eligibility requirements and amount of benefit** can be summarized as follows:

Type of Pension	Service Requirements	Benefit Type and Amount
Superannuation	Service Years < 5	Nil
	5 ≤ Service Years < 10	Gratuity at 1 Month's Pay
	10 ≤ Service Years	Full Formula Pension
Invalid	Service Years < 5	Nil
	5 ≤ Service Years < 10	Gratuity at 1.5 Month's Pay
	10 ≤ Service Years	Full Formula Pension
Compensatory	Service Years < 5	Nil
	5 ≤ Service Years < 10	Gratuity at 1 Month's Pay
	10 ≤ Service Years	Full Pension
Retiring	Service Years < 25	Nil
	25 ≤ Service Years	Full Formula Pension
Family *- death in service*	Service Years < 5	Nil
	5 ≤ Service Years < 10	Gratuity at 1.5 Month's Pay
	10 ≤ Service Years	Family Gratuity **plus** 75% of Formula Pension
Family *- death after retirement*		75% of pension being received by the deceased

Gratuity Formula

Gratuity[7] Amount = [1or 1.5 Month's Pay] × [Completed Years of Qualifying Service]

Family Gratuity Formula

Gratuity Amount = 25% × [Full Formula Pension] × 12
× [Commutation Factor based on age next birthday of deceased]

[6] Qualifying service is specifically defined under the pension rules and discussed in point 12.
[7] Gratuity is a one-time lump sum benefit payment.

Pension Formula

$$\text{Monthly Pension Amount} = \frac{70}{300} \times [\text{Completed Years of Qualifying Service}] \times [\text{Average Emoluments}]$$

There is a maximum of 30 years on the number of qualifying years allowed for pension calculation, i.e. pension at retirement cannot exceed 70% of average emoluments.

Pensions are payable for the lifetime of the retired employee.

On death of the government servant while in service, family pension is to be paid for a period of 10 years from the date of death of the government worker provided that there is a surviving family member as defined under the rules. On death of a government pensioner, pensions will continue to be paid for the remaining period of 10 years from date of retirement. However, for those family members entitled to pension for longer periods (i.e. for life, until remarried, until gainfully employed, etc.) the pension will continue for as long as they are entitled. The list of entitled family members is:

Relationship	**Eligibility for Pension**
Widow	Up to death or remarriage
Widower	Up to death or remarriage
Son(s)	Dependent and below 24 years of age (for life if disabled)
Daughters	Unemployed /unmarried/widow/divorced daughters for life (for life if disabled)
IF NONE OF THE ABOVE	
Widow of Deceased Son	Up to 10 years from death
Son of deceased son	Up to 10 years from death if dependent and below 24 years of age
Daughter of deceased son	Up to 10 years from death if unemployed and unmarried
Widowed daughter of deceased son	Up to 10 years from death if unemployed and unmarried
IF NONE OF THE ABOVE	
Father	Up to death
Mother	Up to death
Brother	Up to 10 years from death if below 21 years of age
Sister	Up to 10 years from death if unmarried
Widowed Sister	Up to 10 years from death if unmarried

The order of relationships shown in the above table is also the order of eligibility. Thus, a brother will only be entitled if none of the relationships given above it are surviving. In case a relationship ceases the next relative becomes eligible for the remaining period of eligibility.

Qualifying Service: For service to qualify it must be under government, not be declared non-pensionable, and be paid from provincial consolidated fund.

- Qualifying service begins when the worker takes over charge of the post to which first appointed. All subsequent periods of service are counted as qualifying service except for any extraordinary leave taken.

- Qualifying service is calculated in completed years, both for eligibility and benefit amount determination. Fractional periods of service of less than six months are ignored but of six months or more are rounded to the next complete year. However, the Pension Scheme rules provide discretion to administrative department for rounding up period of less than six months to next complete year.

Average Emoluments: Average emoluments require two aspects to be specified: the category of wages/allowances that constitute emoluments; and the period over which averaging is to take affect.

- The category of wages and allowances stated to constitute emoluments are
  - Basic Pay
  - Senior Post Allowance
  - Special Pay of all types and nature
  - Personal Pay
  - Technical Pay
  - Dearness Allowance
  - Increments accrued during Leave Preparatory to Retirement
  - Any other emoluments, which may be specially classed as Pay
- The period of averaging was effectively removed in 1986 when it was taken to mean last pay drawn by the government worker.

Option of Commutation/Gratuity: At the time of retirement from service the government worker has the option to commute[8] up to a maximum of 35% of pension and receive lump sum amount in lieu thereof. The amount of commutation is determined using the formula:

Commutation Amount	=	[Percentage Commuted] × [Monthly Gross Pension] × 12 × [Commutation Factor based on age next birthday of worker]

Although factor in general is based on age next birthday for superannuation pensioner the age 60 factor is even if at retirement the worker is between 60-61 years.

The table of commutation factors have been revised over the years and are included as Appendix-VIII.

The government workers retain the right to restoration of commutation. Restoration means that if a retired government worker outlives the years for which commutation had been paid, then the amount commuted would be added back to his monthly pension. The number of years is determined by rounding the commutation factor to next lower integer if fractional part is below 6 months to next higher integer if it is 6 months or more. Restoration of gratuity paid to family is also allowed.

The concept of **minimum monthly pension** was introduced in 1988 and initially applied to "gross pension". In recent years the minimum has been enhanced to Rs.4,500 for family pension cases and Rs.6,000 for other pension cases and is now applied to "net pension".

Pension increases, or pension indexation, are ad-hoc in nature both in terms of timing as well as amount. Currently pension increases are on net pension only and can vary by date of retirement/death and/or employee's pay scale at retirement/death.

In recent years some pension increases are not only allowed to those already receiving pensions but continue to be applied to future retirees: this means that new retirees receive these increases right from

[8] Commutation means surrender of a portion of the monthly pension amount to received a one-time lump sum settlement in lieu thereof.

their first monthly pension. Although increases applicable from 2005, 2006 and 2009 have ceased to apply due to merger of certain non-pensionable allowances into pensionable pay with effect from 01.07.2011, subsequent increases continue to apply. The increases which continue to apply to new retirees as of the valuation date are listed below:

Year Announced	Effect Date	Rate of Increase
2010	01.07.2010	15%
2011	01.07.2011	15%
2013	01.07.2013	10%
2014	01.07.2014	10%
2015	01.07.2015	7.5%

As a result of this practice, pensioners retiring after 01.07.2015 receive a 72% increase in their monthly pension starting from the very first pension payment. The reasoning for the continuation of these increases is said to be to adjust for the anomaly arising from providing pension increases but no increase in pensionable wage: a person retiring before effective date would receive pension increase whereas similar person retiring afterwards would not and hence receive lesser pension. *However, this is a flawed policy response to the observed anomaly and requires review.*

Appendix-III: Analysis of Active Employee Information

The AGP provided payroll related data. This format is not completely in line with that requested by the Consultant; however, all information required for Pension Scheme actuarial valuation was included in the report. The payroll report provided the format shown in Table 5.

Table 5 List of Payroll Report Data Fields

S No	Field Description
1	Employee Personnel Number
2	Personnel Area
3	Cost Centre
4	Organization Unit
5	Job Code
6	Employee Group
7	Position
8	Pay Scale Group
9	Date of Birth

S No	Field Description
10	Date of Appointment
11	Wage Code
12	Wage Type
13	Pay

Separate payroll reports were for district and provincial government employees.

398,504 records of regular employees were included in provincial government employees file whereas 522,550 records were available in the district government employees file.

A number of records were discarded during the analysis of the data. A summary of the discarded records is as follows:

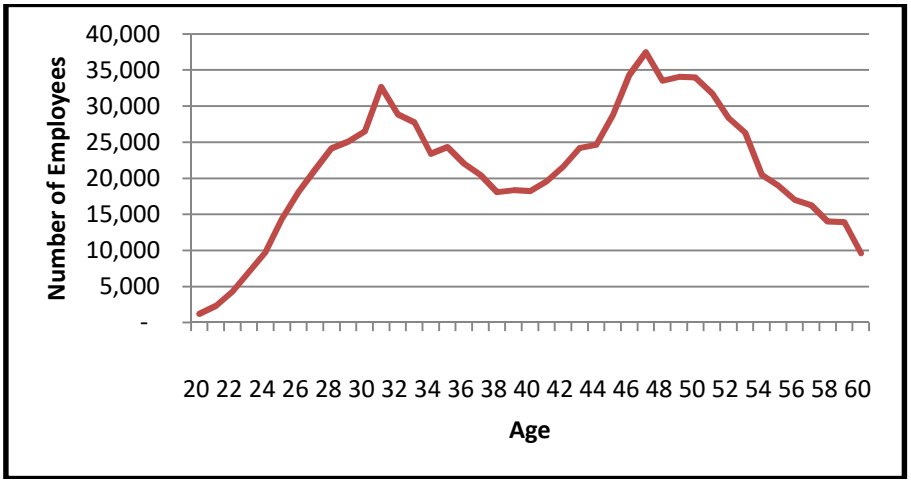
Table 6 Reasons for Removal of Active Employee Records

Individual employee records available for analysis	**921,054**
Repeated Records	40,066
Pensionable Pay = 0 or significantly low	1,180
Date of Birth missing	20
Age < Service	109
Delete Age<20	342
Delete Age>60	1,782
Miscellaneous	9,639
Total records removed for errors	53,138
Individual employee records available for analysis	**867,916**

Source: Consultant's analysis.

The net data sample remaining for developing active employee distributions for the purpose of this actuarial valuation was 867,916.

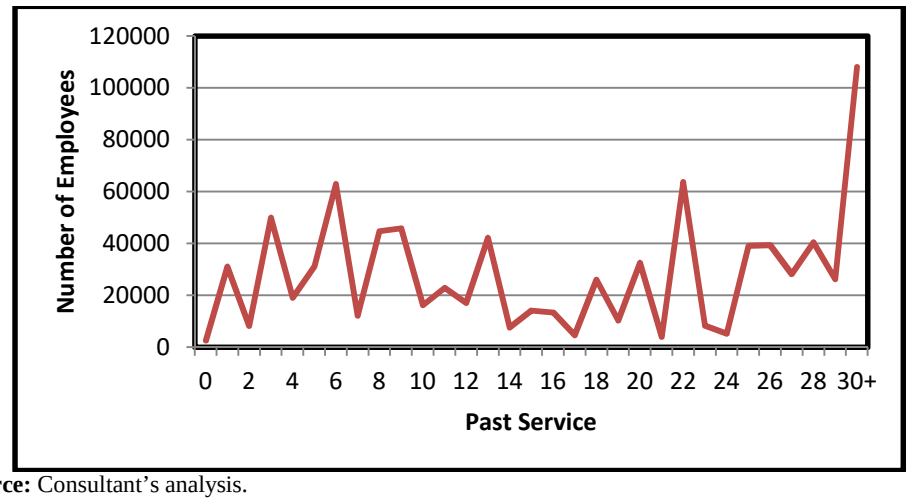
Figure 1 Distribution of Active Employees Sample by Age



Source: Consultant's analysis.

The distribution of the final sample of active eligible employees by attained age at the valuation date is shown in Figure 1.

Figure 2 Distribution of Active Employees Sample by Years of Service



Source: Consultant's analysis.

The distribution of active employee sample by years of service rendered up to the valuation date is shown in Figure 2.

It was assumed that the actual working population would have similar age and service distributions to the employee population receiving salaries through auto-payroll.

After preparation of the sample employee information, the next step was to determine the actual working population eligible for pension benefits. There was no explicit source for the number of total working employees. The PPF provided a distribution of sanctioned strength by grade for 2014 & 2016. Keeping in view the previous valuation assumption for vacant/non-pensionable posts, it has been

deemed appropriate to assume that 12% of sanctioned strength will be such posts. The resulting strength of employees for 2014 & 2016 is as follows:

Table 7 Strength of Employees as of June, 2014 and 2016

Pay Grade	Entitled to Pension 2014	Entitled to Pension 2016
1	58,646	146,550
2	115,316	83,758
3	21,629	9,088
4	10,383	15,828
5	136,210	148,436
6	6,530	11,854
7	51,204	88,779
8	2,610	3,729
9	147,689	194,847
10	2,901	3,382
11	16,134	20,767
12	56,212	15,301
13	911	1,898
14	105,452	118,175
15	28,733	8,298
16	46,109	62,156
17	48,827	60,533
18	18,957	19,646
19	5,088	6,842
20	1,063	1,540
21	151	126
22	6	7
23	363	-
TOTAL	**881,124**	**1,021,540**

Source: Consultant's analysis.

It has been assumed that the grade-wise GoPb employee strength as at June 30, 2015 would be average of the above information.

The employee strength estimated as at June 30, 2015 is as follows:

Table 8 Strength of Employees as of June 30, 2015

Pay Grade	Entitled to Pension
1	60,790
2	129,343
3	19,158
4	10,772
5	151,166
6	7,341
7	55,263
8	2,692
9	158,352
10	3,334
11	17,231
12	60,524
13	803
14	112,496
15	30,806
16	49,692
17	54,679
18	19,302
19	5,965
20	1,302
21	139
22	7
23	363
TOTAL	**951,521**

Source: Consultant's analysis.

The pensionable wages for the above estimated working strength have been determined from the grade-wise average wages obtained from the sample of active employees.

The grade-wise strength and their total monthly pensionable wages used for the valuation are as follows:

Table 9 Estimates of Total Working Population

Pay Grade	Number	Monthly Pensionable Wages
1	60,790	343,103,575
2	129,343	1,120,243,330
3	19,158	186,182,758
4	10,772	86,326,441
5	151,166	1,320,478,172
6	7,341	80,931,132
7	55,263	613,231,061
8	2,692	31,256,867
9	158,352	1,701,947,322
10	3,334	56,421,748
11	17,231	220,427,787
12	60,524	960,504,672
13	803	13,211,192
14	112,496	1,750,420,725
15	30,806	668,248,337
16	49,692	891,999,201
17	54,679	1,461,135,251
18	19,302	799,810,632
19	5,965	333,586,356
20	1,302	79,326,039
21	139	11,458,648
22	7	783,605
23	363	32,242,943
TOTAL	**951,521**	**12,763,277,794**

Source: Consultant's analysis.

Appendix-IV: Analysis of Current Pensioners Information

AGP provided two files for pensioners. One file includes the information of those pensioners (314,092 records) who were not on SAP R/3 database as at the valuation date whereas other file contains pensioners on the system (155,856 records).

Table 10 List of Pensioners Report Data Fields

S No	Field Description
1	Pensioner Id
2	Pension Register No
3	Status
4	Pensioner Type
5	Date of Birth
6	Date of Appointment
7	Date of Retirement
8	Date of Death
9	Pay Scale Area

S No	Field Description
10	BPS
11	Gross Pension
12	Amount of Commutation
13	Net Pension
14	Payroll Area

Source: AGP

A number of pensioner records were discarded due to various anomalies. A summary of the discarded information is as follows:

Table 11 Reasons for Removal of Current Pensioner Records

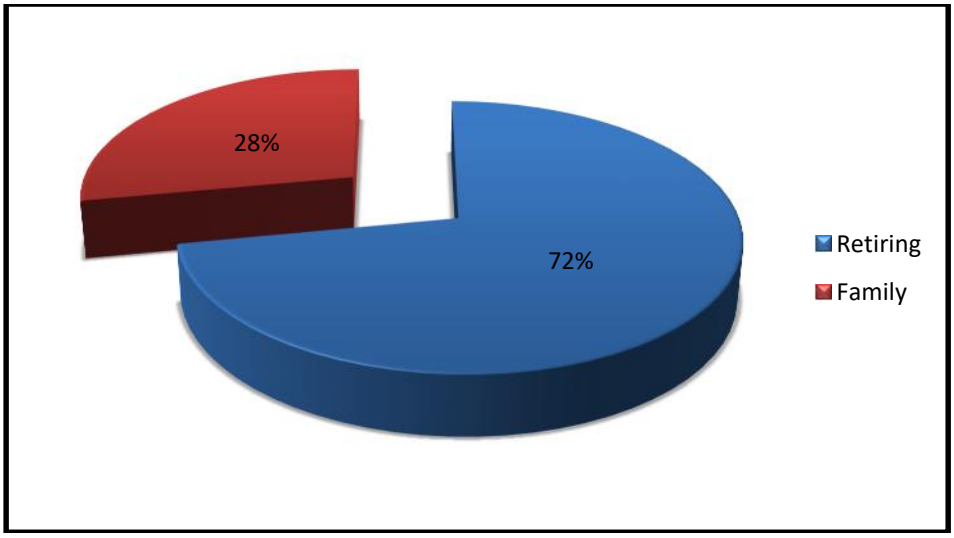
Total individual records provided by AGP	**469,948**
Repeated Records	4,918
Net individual records provided by AGP	**465,030**
Nil pension amount + Inconsistent pension amounts	158,952
Individual pensioners records available for analysis	**306,078**

Source: Consultant's analysis.

From the information provided by AGP, the pensioners' data could only be categorized as "Retiring Pensioners" and "Family Pensioners".

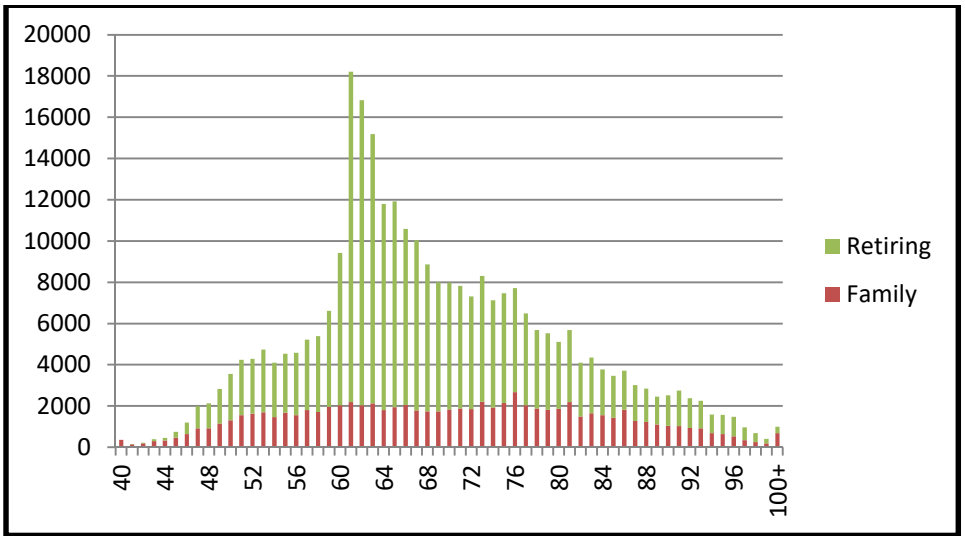
The distribution of retiring and family pensioners in the sample data was as follows:

Figure 3 Distribution of Current Pensioners Sample by Pension Type



Source: Consultant's analysis.

Figure 4 Distribution of Sample Pensioners by Age



Source: Consultant's analysis.

Information of the Pensioners and their Pension amounts at the time of their retirement/death was provided by AGP.

The pension amounts received were projected to the valuation date based on restoration and the Pension Increases announced by GoPb between their retirement/death and the valuation date.

The valuation data for actual strength of **465,030 pensioners** was developed from the information available in the sample.

A summary of the pensioners' data used for the valuation is as follows:

Table 12 Pensioners' Data

Type of Pensioners	Number of Pensioners	Monthly Pension Bill
Superannuation + Retiring + Invalid	337,091	Rs.4.508 billion
Family	127,939	Rs.1.150 billion
Total	**465,030**	**Rs.5.658 billion**

Appendix-V: List of Assumptions

The economic and demographic assumptions required to apply the PUCM for the GoPb Pension Scheme are:

- The economic factors required are:
  - Discount rate/Rate of return on Assets.
  - Wage inflation.
  - Pension inflation.
  - Minimum pension inflation.
- The demographic factors required are:
  - Rates of voluntary/involuntary withdrawal from service before benefit entitlement.
  - Rates of ill health leading to invalid pension entitlement.
  - Rates of early retirement before reaching superannuation age.
  - Rate of pensioner mortality including provision for future improvement, if necessary.
  - Rates of Pension Continuation in Death Cases.
- Additional aspects that require determination include:
  - Administration costs.

Inflation

Inflation is the prime driver for all economic factors. To determine appropriate estimates for discount rate, wage inflation, pension inflation and minimum pension inflation an understanding of expected future inflation is essential.

The recent world financial crises and the security challenges faced resulted in annual inflation peaking in financial year 2008-09 at over 24% and remain high for a couple of years thereafter.. The rate of inflation that is of importance for actuarial projections is the expected long-term rate and not the immediate levels. This is because actuarial calculations, especially those used in standard actuarial methods, are of long-term nature looking at horizons of 50 years or more.

Thus, for the purpose of actuarial analyses carried in this report a **long-term inflation rate of 8.0% per annum** is considered appropriate.

Discount Rate/Rate of Return on Assets

A discount rate for use in present value calculations must be established. A rate of return on invested assets must be determined. With the rate of future inflation already having been chosen, it is more appropriate to estimate of the real discount rate/rate of return on assets rather than the nominal rate.

Investments of a Pension Fund are generally made in secured instruments. This implies that the discount rate used for present value calculations is set equal to inflation plus the risk free real discount rate. Use of a higher discount rate would require factoring in investment related risk factors. This would introduce a high degree of subjectivity and also reduce comparability.

Figure 5 Pakistan Investment Bond Yields and Inflation Comparison

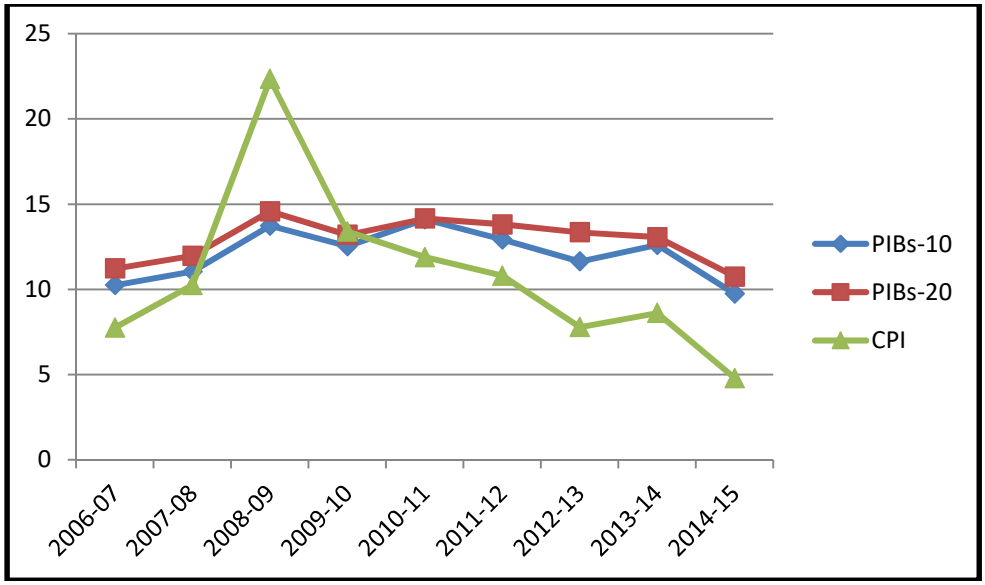


Table 13 Real Yields on 10-Year and 20-Year Pakistan Investment Bonds

		10-year PIB			20-year PIB		
Year	**Annual CPI**	**Yield**	**Real RoR**	**3-Yr Avg**	**Yield**	**Real RoR**	**3-Yr Avg**
2006-07	7.80%	10.2%	2.4%	1.3%	11.2%	3.4%	2.8%
2007-08	12.00%	13.3%	1.3%	1.9%	14.1%	2.1%	2.9%
2008-09	20.80%	12.0%	-8.8%	-1.7%	13.0%	-7.8%	-0.8%
2009-10	11.70%	12.8%	1.1%	-2.1%	13.1%	1.4%	-1.4%
2010-11	13.70%	14.1%	0.4%	-2.4%	14.3%	0.6%	-1.9%
2011-12	11.20%	13.3%	2.1%	1.2%	13.5%	2.3%	1.5%
2012-13	7.8%	11.7%	3.9%	2.1%	13.4%	5.6%	2.8%
2013-14	8.6%	12.6%	4.0%	3.3%	13.1%	4.4%	4.1%
2014-15	4.8%	9.8%	5.0%	4.3%	10.8%	6.0%	5.3%

The recent trends in government bond market are compared in Figure 5 and also in Table 13. There appears to have been a stablizing of the yield curve and a reduction in the real rate of return provided by PIBs. However, year 2008-09, which shows very high negative yield, is an anomaly that overshadows the underlying trend. Keeping in view the underlying trend in respect to yields, for the purpose of this actuarial analysis the real rate of discount/return on assets is set at 2.0% per annum.

Thus, the **effective nominal discount rate and rate of return on scheme assets is set at 10.0% per annum.**

Wage Inflation

Wage inflation comprises of increases to offset for price inflation and recognise seniority as well as promotional increases.

International experience suggests that the increase in wages due to factors other than inflation over the working life of an employee would average in the range of 0.75% to 1.25%.

For the purpose of this actuarial analysis **the long-term wage inflation is assumed to be 9.0% per annum.**

Pension Inflation

Prior to 2001 pension increases were given infrequently, since then there has been an almost annual increase. The rate of increase may at times vary by the cohort of pensioners (older cohorts are provided higher levels to "catch up" due to lower wage levels that prevailed when they retired) or by pay scales.

Civil service pensions in Pakistan are now seen to be reflecting average price inflation although there is no direct link. Internationally pension increases have also been found to be close to average inflation but certainly no more than wage inflation.

Keeping in the long-term nature of the assumptions being set **it is considered appropriate to set the average projected pension increase rate to 8%,** i.e. at par with future inflation.

Minimum Pension Inflation

The concept of minimum monthly pension was introduced in 1988 at the level of Rs.300 per month for gross pension or Rs.150 for net pension (i.e. pension after commutation) for retirement and death cases. It was revised in 2008 to Rs.1,000 for family pension cases and Rs.2,000 for all other cases. In 2010 the minimum was again revised to Rs.2,250 for family pension cases and Rs.3,000 for all other cases. Currently, the minimums are Rs.4,500 for family pension cases and Rs.6,000 for all other cases.

It is likely that the minimum pension will continue to be enhanced on ad hoc basis but driven by inflationary pressures. Thus, for the purpose of this report it is assumed that **minimum pension will grow in future at the rate of inflation, i.e. at 8% per annum**.

Rates of Withdrawal from Service

It is known that workers leave service for voluntary and involuntary reasons before being eligible for benefits under the Pension Scheme, such events are termed "withdrawal from service".

The experience of public and private sector enterprises shows that withdrawals occur more frequently at the younger ages/early periods of employment compared to older ages/later durations of employment. There was insufficient information available to allow analysis of such withdrawals in the aggregate or by parameters such as age or service.

The rates of withdrawal have therefore been set to those generally used in Pakistan for actuarial analyses of civil service pension schemes. The rates used are shown in Appendix-VII.

Rates of Ill-health leading to Invalid Pension

Workers suffer from various forms of physical and medical impairments and in some cases the deterioration in health or capacity is of such level as to result in premature retirement leading to invalid pension benefits.

It is natural to expect very low levels of premature retirements at the younger ages with increasing prevalence as age advances. There was insufficient information available to allow analysis of such premature retirements.

The rates of premature retirements have therefore been set to those generally used in Pakistan for actuarial analyses of civil service pension schemes. The rates used are shown in Appendix-VII.

Rates of Early Retirement

Government workers have the right to retire on a voluntary basis any time after completion of 25 years of qualifying service and receiver "retiring pension" benefits. Such voluntary retirements are practiced by a large number of workers.

To accurately reflect incidence of retirements in determining the long-term cost of the Pension Scheme and flow of pension benefits it is necessary to set appropriate rates of early retirements, which will usually tend to change by age of the worker. Overall there is normally a relatively high incidence when an employee first becomes eligible which reduces quite quickly and almost ceases as employee approaches superannuation. There was insufficient information available to allow analysis of such early retirements.

The rates of early retirements have therefore been set to those generally used in Pakistan for actuarial analyses of civil service pension schemes; these early retirement factors are based on experience of certain public sector entities having pension schemes. The rates used are shown in Appendix-VII.

Rates of Pensioner Mortality

Mortality impacts actuarial calculations of pension schemes both during the active service of employees and once they retire. In case of death and pension continuing to beneficiaries of the ex-worker, the mortality of the beneficiary impacts the cost of the scheme. Therefore, mortality assumptions have to be made for carrying out of any actuarial calculations or projections.

The **base mortality for the purpose of this actuarial analysis is derived from a blended table constructed using the Indian life insurance table (LIC (1994-96) Modified Ultimate Rates) to represent the mortality during the active lifetime of GoPb workers and the Indian annuitant table (LIC (a) (1996-98) Ultimate Rates) to represent the mortality during pension receipt period. The blended rates were reduced by 5% to adjust for the fact that th**e tables are out of date by over 10 years.

There is no distinction in the retiree data provided for gender. Further, the Indian mortality tables are also not segregated by gender, i.e. they are unisex rates. Thus, these rates are applicable to all workers during their working life and after retirement.

Impaired lives, such as those who retire prematurely and receive invalid pensions, are subject to higher rates of mortality compared to standard lives. This means that either separate mortality tables have to be used or an adjustment made to the standard table to reflect this higher mortality expectation.

For the purpose of this report, it has been assumed that an **invalid pensioner will experience mortality equal to a standard life that is three years older.** Thus, the mortality rate for invalid pensioners is the blended table produced for standard life set forward by 3 years.

Family pensioners will have a very different profile compared to the regular retirees. The vast majority will be females; there will dependent children; there will be dependent parents; etc. The mortality experience of this group is likely to materially different to that of the retired worker. This means that the mortality rates used for family pensioners should reflect this composition.

For the purpose of this report, it has been assumed that a **family pensioner will on average experience mortality equal to a standard life that is three years younger.** Thus, the mortality rate for family pensioners is the blended table produced for standard life set back by 3 years.

The rates of mortality assumed in the base year for active and retired employees, impaired lives and family pensioners are shown in Appendix-VIII.

Mortality rates have shown significant improvement in almost every country for most ages. Pakistan has also seen such improvements as evidenced by the increasing expected lifetime for the general population. In view of the developing stage of the country it is clear that further improvements can be expected especially at the older ages.

Many national pension schemes have faced increased financial strain due to the elongation of lifetimes of the pensioner population. Therefore, it is important to make adjustments in mortality for this purpose either implicitly or explicitly.

For the purpose of this actuarial analysis, explicit mortality improvement has been assumed as shown in Table 14.

Table 14 Projected Rates of Improvement in Mortality

Projection Year	Rate of Improvement per year
1 to 20	0.250%
21 to 30	0.125%
31 & above	Nil

Rates of Pension Continuation in Death Cases

In the case of death of a GoPb worker in active service or after retirement there are two events that require determination of their likely incidence.

When a death takes place of a worker in service or of a retiree the likelihood of the deceased worker being survived by an eligible beneficiary to receive family pension has to be estimated. This estimation is further complicated by the fact that some beneficiaries are eligible to receive pension for life while others are eligible to receive pension during the first 10 years from date of retirement or death during service, whichever may be applicable. Thus, it is necessary to estimate the likelihood of there being an eligible beneficiary (i) on death during active service or within 10 years from retirement; or (ii) on death of retiree after 10 years from retirement or continuing eligibility of family pensioner after 10 years from death.

There was no information available to allow estimation of these incidence rates and they had to be determined purely on conjecture. Future actuarial analyses would be in a position, if information is made available, to determine the credibility of these assumptions or suggest modifications.

For the purpose of this actuarial analysis the following assumptions have been made in this respect:

Condition	Percentage of Cases
Eligible beneficiary existing on death of active employee OR on death of retiree within 10 years from retirement	100%
Eligible beneficiary existing after 10 years from date of retirement OR date of death in active service	80%

Administration Costs

The process of determining the benefit amounts due under the Pension Scheme and making the disbursements to the pensioners is carried out by the FD through its district accounts offices in collaboration with office of the AGP. There is no explicit charge made to the province budget specific only to the Pension Scheme's administration.

This actuarial analysis will make no provision for future administration expenditures.

Rate of Increase in Active Employees Strength

It has been assumed that the rate of increase in future strength of in-service employees will be 1% above the strength of the previous year. This assumption is consistent with previous valuation's assumption.

Appendix-VI: Demographic Assumptions used for Active Employees

Rates of withdrawal from service (before being eligible for benefits under the Pension Scheme); ill-health cases resulting in invalid pensions; early retirements (i.e. voluntary or involuntary premature retirements after completion of 25 years of qualifying service) and superannuation used for the Projected Unit Credit actuarial method and cash flow projections.

Age	Withdrawal	Ill-Health	Retirement
20	0.1000	-	-
21	0.0857	-	-
22	0.0968	-	-
23	0.0653	-	-
24	0.0440	-	-
25	0.0297	-	-
26	0.0479	-	-
27	0.0311	-	-
28	0.0204	-	-
29	0.0135	-	-
30	0.0090	0.00050	-
31	0.0060	0.00055	-
32	0.0150	0.00059	-
33	0.0094	0.00064	-
34	0.0060	0.00069	-
35	0.0039	0.00074	-
36	0.0026	0.00078	-
37	0.0017	0.00083	-
38	0.0073	0.00088	-
39	0.0045	0.00092	-
40	0.0028	0.00097	-
41	0.0018	0.00102	-
42	0.0012	0.00106	-
43	0.0008	0.00111	-
44	0.0005	0.00116	-
45	0.0004	0.00121	0.00500
46	0.0002	0.00125	0.00500
47	0.0001	0.00130	0.00500
48	0.0001	0.00210	0.00500
49	0.0001	0.00210	0.00735
50	-	0.00220	0.00970
51	-	0.00220	0.01205
52	-	0.00230	0.01440
53	-	0.00230	0.01675
54	-	0.00240	0.01910
55	-	0.00240	0.02145
56	-	0.00250	0.02380
57	-	0.00250	0.02615
58	-	0.00260	0.02850
59	-	0.00260	0.03085
60	-	-	1.00000

Appendix-VII: Base Year Mortality Rates

Blended mortality table constructed using the Indian life insurance table (LIC (1994-96) Modified Ultimate Rates) to represent the mortality during the active lifetime of workers and the Indian annuitant table (LIC (a) (1996-98) Ultimate Rates) to represent the mortality during pension receipt periods. The rates for invalid lives is basic rate with 3 year step forward and for family lives it is basic rate with 3 year set back.

Age	Basic	Invalid	Family
20	0.000949	0.001036	0.000829
21	0.000981	0.001057	0.000873
22	0.001010	0.001075	0.000913
23	0.001036	0.001090	0.000949
24	0.001057	0.001101	0.000981
25	0.001075	0.001108	0.001010
26	0.001090	0.001112	0.001036
27	0.001101	0.001112	0.001057
28	0.001108	0.001112	0.001075
29	0.001112	0.001141	0.001090
30	0.001112	0.001184	0.001101
31	0.001112	0.001243	0.001108
32	0.001141	0.001318	0.001112
33	0.001184	0.001408	0.001112
34	0.001243	0.001513	0.001112
35	0.001318	0.001635	0.001141
36	0.001408	0.001772	0.001184
37	0.001513	0.001944	0.001243
38	0.001635	0.002120	0.001318
39	0.001772	0.002276	0.001408
40	0.001944	0.002445	0.001513
41	0.002120	0.002651	0.001635
42	0.002276	0.002897	0.001772
43	0.002445	0.003185	0.001944
44	0.002651	0.003518	0.002120
45	0.002897	0.003893	0.002276
46	0.003185	0.004311	0.002445
47	0.003518	0.004754	0.002651
48	0.003893	0.005235	0.002897
49	0.004311	0.005800	0.003185
50	0.004754	0.006398	0.003518
51	0.005235	0.007025	0.003893
52	0.005800	0.007675	0.004311
53	0.006398	0.008313	0.004754
54	0.007025	0.008937	0.005235
55	0.007675	0.009515	0.005800
56	0.008313	0.010177	0.006398
57	0.008937	0.010897	0.007025
58	0.009515	0.011642	0.007675
59	0.010177	0.011715	0.008313

Age	Basic	Invalid	Family
61	0.011642	0.012319	0.009515
62	0.011715	0.013195	0.010177
63	0.011931	0.014522	0.010897
64	0.012319	0.016175	0.011642
65	0.013195	0.018154	0.011715
66	0.014522	0.020457	0.011931
67	0.016175	0.023086	0.012319
68	0.018154	0.026040	0.013195
69	0.020457	0.029319	0.014522
70	0.023086	0.032923	0.016175
71	0.026040	0.036853	0.018154
72	0.029319	0.041108	0.020457
73	0.032923	0.045688	0.023086
74	0.036853	0.050594	0.026040
75	0.041108	0.055825	0.029319
76	0.045688	0.061380	0.032923
77	0.050594	0.067262	0.036853
78	0.055825	0.073468	0.041108
79	0.061380	0.080000	0.045688
80	0.067262	0.086857	0.050594
81	0.073468	0.094039	0.055825
82	0.080000	0.101546	0.061380
83	0.086857	0.109379	0.067262
84	0.094039	0.117537	0.073468
85	0.101546	0.126019	0.080000
86	0.109379	0.134828	0.086857
87	0.117537	0.143962	0.094039
88	0.126019	0.153420	0.101546
89	0.134828	0.163204	0.109379
90	0.143962	0.173314	0.117537
91	0.153420	0.183748	0.126019
92	0.163204	0.194509	0.134828
93	0.173314	0.205593	0.143962
94	0.183748	0.217004	0.153420
95	0.194509	0.228739	0.163204
96	0.205593	0.240799	0.173314
97	0.217004	0.253185	0.183748
98	0.228739	0.265897	0.194509
99	0.240799	0.278933	0.205593
100	0.253185	0.292295	0.217004

Age	Basic	Invalid	Family
101	0.265897	0.305983	0.228739
102	0.278933	0.319994	0.240799
103	0.292295	0.334332	0.253185
104	0.305983	0.348995	0.265897
105	0.319994	0.363982	0.278933
106	0.334332	0.379295	0.292295
107	0.348995	0.394934	0.305983
108	0.363982	0.410898	0.319994
109	0.379295	0.427187	0.334332
110	0.394934	0.443801	0.348995
111	0.410898	0.460740	0.363982
112	0.427187	0.478005	0.379295
113	0.443801	0.495594	0.394934
114	0.460740	0.513509	0.410898
115	0.478005	0.531750	0.427187
116	0.495594	0.710748	0.443801
117	0.513509	1.000000	0.460740
118	0.531750	1.000000	0.478005
119	0.710748	1.000000	0.495594
120	1.000000	1.000000	1.000000

Appendix-VIII: Commutation Factors

List of commutation factors applicable under the GoPb Pension Scheme over the years:

Age	Effective Date of Factors Application			
	01.12.2001	**01.07.1986**	**01.07.1966**	**Previous**
20	40.5043	50.6304	24.265	22.40
21	39.7341	49.6676	24.061	22.20
22	38.9653	48.7066	23.853	21.99
23	38.1974	47.7467	23.640	21.79
24	37.4307	46.7884	23.424	21.57
25	36.6651	45.8314	23.203	21.35
26	35.9006	44.8758	22.978	21.13
27	35.1372	43.9215	22.747	20.90
28	34.3750	42.9688	22.513	20.66
29	33.6143	42.0179	22.273	20.42
30	32.8071	41.0089	22.028	20.18
31	32.0974	40.1218	21.777	19.93
32	31.3412	39.1767	21.522	19.67
33	30.5869	38.2336	21.260	19.41
34	29.8343	37.2929	20.993	19.14
35	29.0841	36.3551	20.720	18.86
36	28.3362	35.4203	20.442	18.58
37	27.5908	34.4885	20.157	18.29
38	26.8482	33.5603	19.867	17.99
39	26.1009	32.6361	19.570	17.69
40	25.3728	31.7160	19.267	17.38
41	24.6406	30.8007	18.956	17.07
42	23.9126	29.8907	18.641	16.74
43	23.1840	28.9800	18.318	16.41
44	22.4713	28.0891	17.988	16.07
45	21.7592	27.1990	17.650	15.73
46	21.0538	26.3172	17.307	15.37
47	20.3555	25.4444	16.956	15.01
48	19.6653	24.5816	16.596	14.64
49	18.9841	23.7301	16.231	14.27
50	18.3129	22.8911	15.859	13.90
51	17.6526	22.0658	15.481	13.51
52	17.0050	21.2563	15.096	13.13
53	16.3710	20.4638	14.707	12.74
54	15.7517	19.6896	14.313	12.34
55	15.1478	18.9348	13.915	11.95
56	14.5602	18.2002	13.513	11.55
57	13.9888	17.4860	13.109	11.15
58	13.4340	16.7925	12.702	10.76
59	12.8953	16.1191	12.294	10.36
60	12.3719	15.4649	11.886	9.97

Age	Effective Date of Factors Application			
	01.12.2001	**01.07.1986**	**01.07.1966**	**Previous**
61	11.8632	14.8290	11.497	9.58
62	11.3684	14.2105	11.104	9.20
63	10.8872	13.6090	10.713	8.82
64	10.4191	13.0239	10.327	8.45
65	9.9639	12.4549	9.946	8.08
66	9.5214	11.9017	9.570	7.72
67	9.0914	11.3643	9.200	7.37
68	8.6742	10.8428	8.836	7.02
69	8.2697	10.3371	8.478	6.68
70	7.8778	9.8472	8.127	6.35
71	7.4983	9.3729	7.783	6.03
72	7.1314	8.9142	7.448	5.72
73	6.7766	8.4708	7.121	5.42
74	6.4342	8.0427	6.802	5.12
75	6.1039	7.6299	6.494	4.84
76	5.7858	7.2322	6.194	4.57
77	5.4797	6.8496	5.906	4.31
78	5.1854	6.4818	5.627	4.06
79	4.9030	6.1287	5.360	3.83
80	4.6321	5.7901	5.104	3.61

History of Pension Increases provided by GoPb

Increase in pension Allowed by the Govt. OF THE PUNJAB w.e.f 1980 to onward			
Effective Date			**Retired up to**
01.07.1980	**BPS**	**Increase**	
	1 To 10	Rs.40	30.06.1985
	11 To 16	Rs.70	30.06.1985
	17-18	Rs.100	30.06.1985
	19-20	Rs.150	30.06.1985
	21-22	Rs.200	30.06.1983
01.07.1981	10% of Gross + Increases up to maximum Rs. 200		31.12.1982
01.07.1982	10% of Gross + Increases up to maximum Rs. 200		30.06.1983
01.07.1983	10% of Gross + Increases up to maximum Rs. 200		30.06.1983
INDEXABLE PENSION			
Date of Effect	**Rate of Increases**		
Ist July 1985	13.5% of Gross+ Increases upto July 1983	Pension Up to Rs.1500	31.12.1986
	10% of Gross+ Increases upto July 1983	Pension above Rs.1500	
Ist July 1986	4.5% of Gross+ Increases upto July 1983	Pension Up to Rs.1500	31.12.1986
	3.50% of Gross+ Increases upto July 1983	Pension above Rs.1500	31.12.1986 & 01.01.1986 to 30.06.1986
Ist July 1986	ESB 2% per year of gross pension for every completed year of service after 30 years up to maximum 10%		01.07.1986 to 30.11.2001
Ist July, 1987	4% of Gross+ Increases upto July 1983		30.06.1987
Ist July, 1988	7% of Gross+ Increases upto July 1983		30.06.1988 (Minimum Pension Self 300 Family 150)
Ist July, 1990	10% of Gross+ Increases upto date		30.06.1990
Ist.Oct.1990	6 months service will be rounded to next year towars ESB calculation		01.07.1986 to 30.11.2001
Ist July, 1991	32% of Gross+ Increases upto date		30.04.1977
	12% of Gross+ Increases upto date		01.05.1977 to 30.06.1990
Ist July 1995	15% of Gross+ Increases upto date		30.04.1977
	10% of Gross+ Increases upto date		01.05.1977 to 31.05.1991
	5% of Gross+ Increases upto date		01.06.1991 to 31.05.1993 and old pensioners who opted for Payscales 1991
Ist March 1997	10% of Gross+ Increases upto date	BPS-1 To 16 & 17 (moveover)	28.02.1997
Ist July 1999	20% of Gross+ Increases upto date	BPS 17 to 22	30.11.2001

	25% of Gross+ Increases upto date	BPS 01 to 16 Moveover 17	30.11.2001
Ist Dec 2001	15% of Net+ Increases upto date		30.06.1991
	10% of Net+ Increases upto date		31.05.1994
	5% of Net+ Increases upto date		01-06-1994 to 30-11-2001 and old pensioners who opted for Payscales 1994
Ist July 2003	15% of Net+ Increases upto date		30.06.2005
Ist July 2004	16% of Net+ Increases upto date		31.05.1994
	8% of Net+ Increases upto date		01-06-1994 to 30.06.2005 and old pensioners who opted for Payscales for 2001
Ist July 2005	10% of Net+ Increases upto date		30.06.2005
Ist July 2006	20% of Net+ Increases upto date		30.04.1977
	15% of Net+ Increases upto date		After 01.05.1977
Ist July 2007	20% of Net+ Increases upto date		30.06.1977
	15% of Net+ Increases upto date		01.07.1997 to 30.06.2007
Ist July 2008	20% of Net+ Increases upto date		30.06.2008
	Min Pen Rs.2000/ for self & for Family 1000/- wef 01.07.2008		
Ist July 2009	20% of Net+ Increases upto date		30.11.2001
	15% of Net+ Increases upto date		01.12.2001
01.07.2010	20% of Net+ Increases uptodate		30.11.2001
	15% of Net+ Increases uptodate		after 01.12.2001
Medical Allow 01.07.2010	20% of Net+ Increases uptodate	BPS 16 to 22	30.06.2010 & after
	25% of Net+ Increases uptodate	BPS 01 to 15	
NOTE	**Pensioners who retired in Payscales 2011 will allowed Medical Allowance on NET PENSION+INCREASES upto 30.06.2010.**		
	Min Pen Rs.3000/ for self & for Family 2250/- & Rate of Family Pension increased from 50% to 75%.		for all
01.07.2011	20% of Net+ Increases upto date(Excluding Medical Allowance)		30.06.2002
	15% of Net+ Increases upto date (Excluding Medical Allowance)		after 01.07.2002
01.07.2012	20% of Net+ Increases upto date(Excluding Medical Allowance)		30.06.2012 and after
01.07.2013	10% of Net+ Increases upto date(Excluding Medical Allowance)		30.06.2013 and after

01.07.2014 10%

Restoration Order by GoPb

TOP PRIORITY
COURT CASE

No.FD-SR-III/4-41/2008
GOVERNMENT OF THE PUNJAB
FINANCE DEPARTMENT

Dated Lahore, 22nd July, 2014

To

1. All Administrative Secretaries to Government of the Punjab
2. The Principal Secretary to Governor of the Punjab.
3. The Principal Secretary to Chief Minister, Punjab.
4. The Military Secretary to Governor of the Punjab.
5. All Commissioners in the Punjab.
6. All District Coordination Officers in the Punjab.
7. All Administrators, District Governments in the Punjab.
8. All Heads of Attached Departments, Government of the Punjab.
9. The Registrar, Lahore High Court, Lahore.
10. All District and Sessions Judges in the Punjab.
11. The Secretary, Punjab Public Service Commission, Lahore.
12. The Secretary, Punjab Provincial Assembly, Lahore.
13. The Director General, Audit & Accounts (Works), Lahore.
14. The Provincial Director, Local Fund Audit, Punjab, Lahore.
15. The Chief Pilot, VIP Flight, Lahore.
16. The Incharge, Public Policy & Change Management Wing, S&GAD.

SUBJECT: **CIVIL APPEALS NO.971 TO 1012 OF 2012, 1013 OF 2012 AND CMA NO.5314 OF 2012, 1014 TO 1017 OF 2012, 289-L, 386-L TO 401-L OF 2013 AND 61 TO 223 & 274 OF 2014 AND CIVIL PETITIONS NO.1040-L, 1049-L & 1070-L OF 2013, 46-L TO 58-L, 92-L TO 94-L, 106-L, 213-L, 219-L TO 225-L, 239-L, 257-L, 277-L, 293-L, 307-L TO 315-L & 330-L OF 2014.**

I am directed to refer to the subject cited above and to state that in compliance of detailed judgment of the Honourable Supreme Court of Pakistan dated 31.03.2014 in the cases noted in the subject, para 16(e) of this department's letter No.FD.PC.2-1/2001 dated 22.10.2001 is hereby omitted and shall be deemed to have been so omitted ab initio.

2. I am further directed to say, for the purpose of clarity, that, with omission of para 16(e) of this department's aforesaid letter, pensioners would be entitled to the benefit of restoration of commuted portion of pension in lieu of pension / gratuity in accordance with the applicable rules.

22.7.2014

(SHAFAAT ALI)
DEPUTY SECRETARY (SR)

Arrears Payment Order by GoPb

TOP-PRIORITY
BY SPECIAL MESSENGER

NO.FD.SRIII.4-41/2008
GOVERNMENT OF THE PUNJAB
FINANCE DEPARTMENT

Dated Lahore the 7th October, 2016

To

The Accountant General,
Punjab.

Subject: **PAYMENT OF ARREARS OF PENSION.**

Kindly refer to this Department's notification of even number dated 17.6.2015, on the subject cited above.

2. It is advised that all pensioners of Government of the Punjab who have reached the age of 85 years, as on 01.07.2016, are allowed payment of arrears of increases on commuted portion of pension, and these increases be paid latest by 31st December, 2016, in two equal installments. Those who have passed away, their families / legal heirs are also entitled to the same benefit, under the rules.

(MUHAMMAD NAWAZ KHALID ARBI)
ADDL: FINANCE SECRETARY (REG.)

Arrears Payment Plan by GoPb

IMMEDIATE
TOP PRIORITY

NO.FD.SRIII.4-1202016
GOVERNMENT OF THE PUNJAB
FINANCE DEPARTMENT

Dated Lahore the 23rdJanuary, 2017

To,

The Accountant General,
Punjab,Lahore

Subject: **PAYMENT PLAN**

I am directed to refer to the subject cited above and state that on the basis of information, provided by your good office **(Annex-1)**, the Hon'ble Chief Minister, Punjab has allowed to make following payment of arrears of increases on commuted portion of pension, in the wake of Judgments of the Hon'ble Lahore High Court, Lahore, passed in Criminal Original No.2555-W-2015, titled Muhammad Aslam Uppal Vs Yousaf Khan and No. 1889-W-16, titled Muhammad Aslam Uppal Vs Shoukat Ali, and No. 2983-W-2015, titled Sarfraz-ul-Haq Baig Vs Imran Iqbal and No. 1670-W-2015, titled Sarfraz-ul-Haq Baig Vs Shoukat Ali, subject to the final outcome of the Civil Petitions for Leave to Appeal (CPLAs) No.3059-L-16 (in Writ Petition No. 25147/16),No. 2984-L-16 (in Writ Petition No. 25631/16) and No. 2832-L-16 (in Writ Petition No. 24920/16), filed by the Government of Punjab in the August Supreme Court of Pakistan:

FY of Payment	Description	No. of Pensioners	Financial Implication (InRs.)	Remarks
2016-17	Petitioners As on 22.01.2016	36	10,879,425.67/-	The families and the legal heirs of the deceased pensioners will be made payments accordingly.
2017-18	Pensioners at the age of 75 + (as on 01.07.2017)	To be calculated, out of total 35,277, by the Accountant General's office	10,650,051,116.34/-	
2018-19	Pensioners at the age of 73 + (as on 01.07.2018)	---do---		
2019-20	Pensioners at the age of 72 + (as on 01.07.2019)	---do---		

Arrears Payment Plan by GoPb

TOP-PRIORITY
BY SPECIAL MESSENGER

NO.FD.SRIII.4-41/2008
GOVERNMENT OF THE PUNJAB
FINANCE DEPARTMENT

Dated Lahore the 7th October, 2016

To,

The Registrar,
Lahore High Court,
Lahore

Subject: **PAYMENT PLAN**

I am directed to refer to the Judgment of the Hon'ble Lahore High Court, Lahore, passed in Criminal Original no. 597-W/2015, titled as Murawwat Hussain, etc Vs Imran Iqbal etc, dated 30.10.2015, and submit the Payment Plan about arrears of increases on commuted portion of pension, as under:

FY of Payment	Description	No. of Pensioners	Financial Implication (inRs.)	Disbursement Schedule
2016-17	Pensioners at the age of 85 +	41,568	~ 9 billion	In 02 equal installments upto Dec 31, 2016
2017-18	Pensioners at the age of 80 +	70,075	~ 14 billion	In 12 equal monthly installments
2018-19	Pensioners at the age of 75 +	64,949	~ 12.5 billion	In 12 equal monthly installments
	GRNAD TOTAL	**176,592**	~ 35.239 billion	

(MUHAMMAD NAWAZ KHALID ARBI)
ADDL: FINANCE SECRETARY (REG.)