



*Anwar Associates*  
*Consulting Actuaries*

# **GOVERNMENT OF THE PUNJAB**

**Lahore, Pakistan**

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## **Actuarial Evaluation of Punjab Pension Fund as at 30.06.2019**

**WITH REFORM OPTIONS AND NEW SCHEME OPTIONS FOR NEW ENTRANTS**

**(Final Report)**

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## EXECUTIVE SUMMARY

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This Report has been prepared as part of our Contract with Punjab Pension Fund (PPF) dated 25th February 2020 for the Actuarial Evaluation of the Pension Fund of the Government of Punjab as at 30<sup>th</sup> June 2019. The Deliverables as specified in the Contract are mentioned in Section I of this Report.

The data according to our specifications, in respect of the Active employees and Pensioners as at the Evaluation date was provided by Punjab Pension Fund, from Accountant General's (AG's) Office, Government of Punjab.

We appreciate the efforts made by the senior management of PPF in obtaining the data from the AG office and making initial scrutiny of the data. Thus the overall accuracy of the data we received, was much better, than the data which has been made available for previous Actuarial evaluations.

### A. Data for Active Employees and Pensioners

The summary of the salient features of the data used for Actuarial Evaluation of the Pension Fund liabilities are as follows:

More comprehensive Analysis of the data is shown in Section 2

#### Active employees

<b>Number of Active Employees</b>	<b>965,323</b>
Total monthly pensionable pay	Rs. 22,875.338 million
Average monthly pensionable pay	Rs.23,697
Average age	39 years
Average past service	13.5 years

#### Pensioners

<b>Number (including Family pensioners)</b>	<b>479,274</b>
Total monthly pension	Rs. 12,836.610 million
Average monthly pension	Rs 26,783

### B. Pension Fund Assets

The Assets of the Pension Fund as on 30<sup>th</sup> June 2019 are **Rs.59.273 billion**, according to the information provided by the Punjab Pension Fund office.

### C. Summary of the Actuarial Evaluation assumptions

The assumptions with relevant explanations are given in Section 3.

#### a) Financial

- i) Discount rate: 11.75% as recommended by PSoA.
- ii) Rate of Increase in Pensionable pay: 10.75%
- iii) Rate of Increase in Pension: 9.75%
- iv) Rate of Increase in Medical Allowance: 5.00%
- v) New Entrants for Cash Flow Projections: 1% annual net increase in the employee strength.
- vi) Existing Early Retirement Condition i.e., retirement after 25years of service without any condition of the age being 55years.

#### b) Demographic

- i) The State Life Mortality Table (SLIC) has been used with different adjustments in age for Active employees, Pensioners, Widow/widowers, Invalid Pensioners.
- ii) The Withdrawal and Ill health rates used are those which are generally used for Public sector Organisations in the country.

### D. Pension Fund Liability for Active employees & Pensioners

- i. Total Accrued Actuarial Liability of the Pension Fund is Rs.6,598.345 billion as at June 30, 2019. The bifurcation of this liability is as shown below:

	(Rs. Million)
Accrued Actuarial Liability on account of:	
a) Active Employees	3,583,381
b) Pensioners (including Family pensioners)	3,014,964
<b>Total Accrued Actuarial Liability as at 30.06.2019</b>	<b>6,598,345</b>
Fund Assets	59,273
<b>Unfunded Accrued Liability</b>	<b>(6,539,072)</b>
Required Contribution Rate, as %age of Pensionable pay, to fund <i>Future Accrual</i> of Pension liability.	65.01%

- ii. The Unfunded Accrued Liability (Deficit) as at 30.06.2019 is **Rs.6,539.072 billion.**
- iii. An annual Contribution Rate of 65.01% of the Pensionable pay is required to fund the **Future Accrual of the** liability for the pensions. The Break-up of the Contribution rate according to different benefits is given in the Main Report.

## E. Projection of Pension Payments for next ten years

The Cash Flow Projection of the Commutation amounts and Pensions payable over next ten years are shown below. This Projection is based on the assumptions mentioned above including the assumption for the New entrants.

Year	Commutation (Rs. billion)	Pension (Rs. billion)	Pen. + Comm. (Rs. billion)
2019-20	33.259	192.812	226.071
2020-21	37.549	218.179	255.728
2021-22	46.864	247.839	294.703
2022-23	51.949	280.934	332.883
2023-24	60.246	318.787	379.033
2024-25	67.271	360.823	428.094
2025-26	70.677	406.277	476.954
2026-27	74.095	455.431	529.526
2027-28	86.347	511.050	597.397
2028-29	85.295	569.977	655.272

## F. Sensitivity Analysis

The following Table summarises the effect of various Scenarios on the Accrued Pension Fund liability as at 30.06.2019: More detailed Analysis are given in Section 3

Scenarios	Accrued Pension Liability as at 30.06.2019 (Rs. million)	%age Increase/Decrease in Accrued Pension Liability compared to Base
<b>Base Scenario</b>	<b>6,598,345</b>	
Discount Rate increase by 1.0%	5,735,092	-13.1%
Discount Rate decrease by 1.0%	7,686,774	16.5%
Salary Growth Rate increase by 1.0%	6,918,671	4.9%
Salary Growth Rate decrease by 1.0%	6,317,210	-4.3%
Pension Growth Rate increase by 1.0%	7,329,204	11.1%
Pension Growth Rate decrease by 1.0%	5,984,643	-9.3%

## G. Recommended previous Funding Strategies.

The Funding Strategy recommended in the previous Actuarial Valuation Report of the Pension Fund as at 30-6-2015 and in the earlier Reports have never been followed strictly. Payments as specified in the Reports have not been made to the Fund. Only ad hoc token amounts have been paid in different years, depending on the availability of surplus funds with the Government.

## **H. Recommended Future Funding Strategy**

It will be seen that over the years it has not been possible by the Government of Punjab to follow the recommended Funding Strategies mainly because of financial constraints. These financial constraints are very likely to continue in future, as well, and thus there is no reason to continue following similar types of Strategies.

In our opinion, for the Pension Schemes for Civil Servants, where benefits are guaranteed by the Government, it is not prudent that the Scheme should be fully Funded, especially when the Government is already borrowing funds for current and developmental expenses. Such a type of Funding Strategy is only feasible where the Government have surplus funds or there are specific donations from foreign donors for this purpose.

Full funding of Pension Schemes is only necessary, in the case of the Schemes for employees in the private sector. Here the future pensions for the employees are to be secured, in the event the Employer becomes insolvent.

Thus, it is suggested that the payment to the Pension Fund each year should be on 'PAY AS YOU GO' basis and all future pension payments should be made from the Pension Fund. This is the method being followed in number of countries, to meet the liabilities for the Pension Schemes of the Civil Servants. Further details of this Funding Strategy are mentioned in Section 8 of the Main Report.

## I. Recommended Pension Reforms as from 1st July 2021, for New Pensioners

Below are given the Reduction amounts in the Total Accrued Liability for various Options, assuming that only that particular Benefit is affected and there is no other change in the terms and conditions of the Existing Scheme.

### 1 Early Retirement after 25 years of service or age 55 years, whichever is later.

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- The Total Accrued Liability as at 30-6-2019 will reduce to Rs. 6,556,277 million.
- Reduction of Rs. 42,068 million i.e. **0.64%**

### 2 Immediate Total Reduction in Ad-hoc Pension Increases

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- The Total Accrued Liability as at 30-6-2019 will reduce to Rs 4,224,024 million.
- Reduction of Rs 2,374,321 million i.e.35.98%

### 3 Gradual Reduction in Ad-hoc Pension Increase

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- The Total Accrued Liability as at 30-6-2019 will reduce to Rs 5,254,576 million.
- Reduction of Rs 1,343,769 million i.e. **20.37%**

### 4 No Medical Allowance payable only for future retirees

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- The Total Accrued Liability as at 30-6-2019 will reduce to Rs.6,154,261million
- Reduction of Rs. 444,084 million i.e. **6.73%**
- **Note:** In case the Cash Medical Allowance of Current Pensioners is also discontinued the Total Accrued liability will reduced further by **Rs.240,924 Million i.e. 3.65%**.

### 5 Gradual Reduction in Ad-hoc Pension increase and No Medical allowance payable only for future retirees

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- The Total Accrued Liability as at 30-6-2019 will reduce to Rs.4,810,492 million.
- Reduction of Rs. 1,787,853 million i.e. **27.10%**

### 6 Increase in Retirement age of one year each year as from 1st July 2021 to 65 years, with pension accrual rate being 2% after age 60

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- The Total Accrued Liability as at 30-6-2019 will reduce to Rs.6,545,461 million.
- Reduction of Rs. 52,884 million i.e.**0.8%**



## **J. Pension Scheme Options for New Entrants as from 1st July 2021**

It is recommended that for New Entrants the Retirement age should be increased to at least 65 years, because of expected increase in life expectancy over the years and the individuals likely to have longer working span.

Further the Pension Scheme should be on non-contributory basis, to continue with same scales of pay for all employees in the future.

The different Pension Scheme Options are suggested below for necessary consideration.

### **a) Reformed Defined Benefit Pension Scheme (RDB)**

The New Employees (New Entrants) of the Government of Punjab as from 1<sup>st</sup> July 2021, may be entitled to benefits payable under the Reformed Defined Benefit Pension Scheme, where the Retirement age will be 65 years and the Pensionable pay for the purpose of the Pension and payment of any lump sum amount will be the average pay for the last 36 months. The annual accrual rate will be 2.00% with the maximum pension after 35 years of service being 70% of the Pensionable pay. Actuarially reduced pension will be payable after 25 or more years of service for Employees retiring before age 65 years.

This Scheme can be fully funded by paying monthly 21% of the pay of each New Employee to a Special Pension Fund. This rate of Contribution will be reviewed at each Actuarial Evaluation to be conducted at regular intervals.

The detailed terms and conditions of this Scheme are given in the Main Report.

### **b) Defined Contribution Pension Scheme (DC Schemes)**

Under this arrangement a Contribution Rate as a certain percentage of the monthly pay of each employee is paid into his Fund, generally known as Individual Pension Fund (IPF). At the date of retirement at age 65 years there will be an Option to receive 35% of the accumulated value of IPF in Cash and the remaining to be used to buy an Increasing Annuity with Widow/widower/children benefits in the Open market from a Life Insurance Company or this amount can be placed with a Mutual Fund, under a Drawdown Arrangement.

As the Government will be paying the contributions on behalf of the New Employees and the accumulated Fund in respect of each employee at retirement age should be adequate to purchase somewhat similar pension as for the Reformed DB Scheme, therefore it is necessary that the Contribution rate should differ for each group of entry ages of the employees. These Rates are estimated to vary between 16.5% for up to entry age 25 and 25% for age group 41 to 45 years.

Here, it may be noted that there will be no guarantee by the Government as regards the minimum rate of return on the Managed Fund and the capital amount or the minimum amount of Pension. This is good from the point of view of the Government, but in the event the financial circumstances become so bad or the performance of the Fund Managers results in losses, resulting in the Retirees pensions being drastically reduced, then the Government again may have to subsidise the pensioners. This subsidy may also become necessary if the market conditions are such that the Annuity rates being quoted by Insurance Companies are very low.

(Detailed terms and conditions of this Scheme and the Contribution Rates are given in the Main Report.)

**c) Hybrid Pension Scheme (Combination of DB and DC Schemes)**

This is an arrangement where the New Employees will be guaranteed to receive 50% of the pension and other benefits as payable in the case of the Reformed Defined Benefit Scheme (RDB), mentioned above, on leaving the service.

To provide the remaining 50% of the pension a DC Scheme as mentioned above will be set up. The Government will Contribute half the amount due for the full DC Scheme, on behalf of the new employees into their Individual Pension Funds.

The Employee will be entitled to exactly half the benefits payable under the full DC Scheme.

Under this arrangement the Employee's total pension will not wholly depend on the performance of the Fund Managers and the prevailing financial conditions at the time of his retirement, as in the case of a DC Scheme but he will at least have 50% of his pension guaranteed by the Government.

# **MAIN REPORT**

## **SECTION 1**

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### **1.1 Purpose of the Report**

This Report has been prepared as part of our Contract with Punjab Pension Fund (PPF) dated 25th February 2020 for the Actuarial Evaluation of the Pension Fund of the Government of Punjab as at 30<sup>th</sup> June 2019

The data according to our specifications, in respect of the Active employees and Pensioners as at the Evaluation date was provided by Punjab Pension Fund, as was available with Accountant General's (AG's) Office, Government of Punjab.

The overall accuracy of the data we received, was much better, than the data which has been made available for previous Actuarial evaluations. We understand that this has only been possible through the efforts of the General Manager of Punjab Pension Fund and his colleagues.

### **1.2 Deliverables of the Report**

The Deliverables as Specified in the Contract are as follows

1. Report containing Actuarial Assessment of Pension liabilities as at June 30, 2019. The Report must determine:
  - a) Present value at June 30, 2019 of projected pension liabilities for at least 30 years.
  - b) Contribution rate to fund existing pension scheme.
  - c) Pension cash outflows for the next 30 years.
  - d) Sensitivity Analysis of PV of liabilities vis-à-vis key variables e.g. inflation, interest rates etc.
2. Report on Funding Strategy to Fund existing pension scheme.  
The Report must include the following:
  - a) Review of the existing Funding Strategy to validate its adequacy.
  - b) Recommendations regarding future Funding Strategy for achieving a targeted funded status over the next twenty years.
3. Report regarding Pension liabilities in line with International Public Sector Accounting Standard 39 (IPSAS) for FY 2019.
4. Report regarding composition of contractual workers in the civil service and the impact on pension liabilities upon their regularization under the Punjab Regularization of Service Act, 2018.
5. Report identifying reform contours to bring contribution rate of the existing pension Scheme at a manageable level for seeking opinion by the Fund/Government from legal experts for their acceptability under current judicial paradigm.
6. Propose a structure for a new pension scheme for new hires in the Government and its impact on the pension expenditure of the Province.
7. Impact of any change in retirement age on pension expense and liability.

### 1.3 Data of Active Employees and Pensioners

The relevant data in respect of total Active Employees and total Pensioners was provided to us by the PPF.

Finance Department/Accountant General's Office gave separate information for Active employees and Pensioners to PPF. After checking for the data's reasonableness PPF made some corrections to increase the accuracy of the information provided.

#### i. Active Employees

The Table No.1A below shows the summary of the data of the Active Employees used for the Actuarial evaluation.

**Table No. 1A**

<b>Number of Active Employees</b>	<b>965,323</b>
<b>Total Monthly Pensionable pay</b>	<b>Rs. 22,875.338 million</b>
Average Monthly Pensionable pay	Rs.23,697
Average age	39 years
Average past service	13.5 years

#### ii. Pensioners

Table No.1B below shows the summary of the data of the Pensioners, used for the Actuarial evaluation.

**Table No. 1B**

Number of Employee Pensioners	322,307
Monthly Pension	Rs. 9,907,705,489
Number of Family Pensioners	156,967
Family Monthly Pension	Rs. 2,928,904,974
<b>Total Pensioners</b>	<b>479,274</b>
<b>Total Monthly Pension</b>	<b>Rs. 12,836,610,463</b>

## 1.4 Pension Fund Assets

Table No.1C below shows the detail of the Pension Fund Assets on 30-6-2019.

**Table No. 1C**

<b>Assets Type</b>	<b>Amount (Rs. Million)</b>	<b>Percentage</b>
PIBs	32,387	54.64%
Corporate bonds/TFCs	797	1.34%
Mutual Funds Unit	4,559	7.69%
Cash at bank	19,750	33.32%
Accrued Markup	1,678	2.83%
Other assets*	102	0.17%
<b>Total Fund Size</b>	<b>59,273</b>	<b>100.0</b>

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

## SECTION 2

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### Data Analysis

#### 2.1 Active Employees

The Table No. 2A below shows the distribution of 965,323 Active Employees according to **Basic Pay Scale**:

**Table No. 2A**

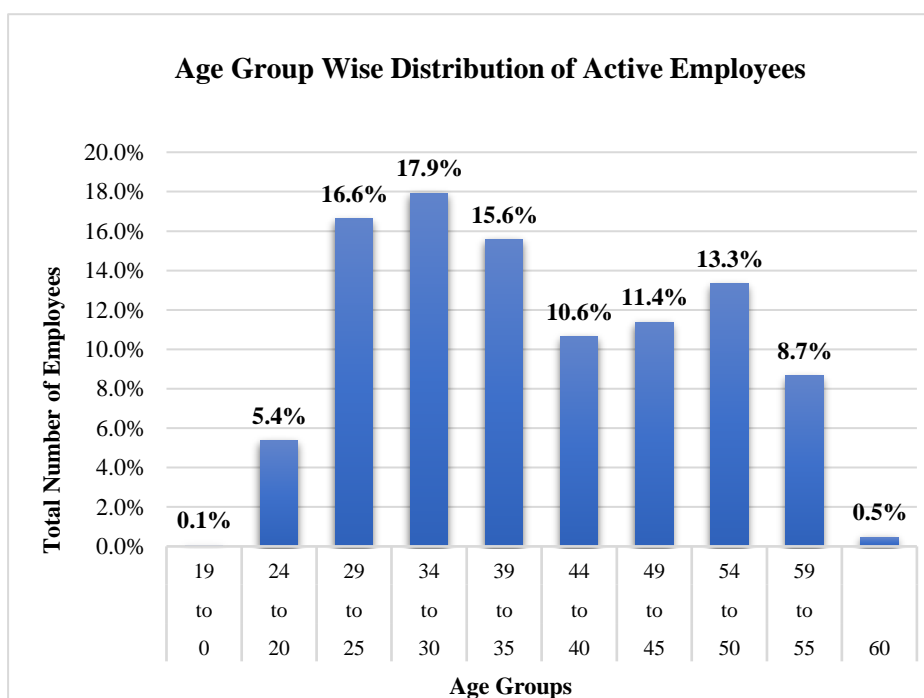
Pay Grade	Number of Employees	% of Total Number	Average Monthly Pensionable Pay (Rs.)
1	85,407	8.848%	10,367
2	41,484	4.297%	13,981
3	23,965	2.483%	16,709
4	30,473	3.157%	17,685
5	83,157	8.614%	15,798
6	4,641	0.481%	21,550
7	129,780	13.444%	17,041
8	3,418	0.354%	24,755
9	43,860	4.544%	20,351
10	2,772	0.287%	21,617
11	51,169	5.301%	21,529
12	8,989	0.931%	24,882
13	1,988	0.206%	33,537
14	226,451	23.459%	22,736
15	70,135	7.265%	26,190
16	72,332	7.493%	34,632
17	58,006	6.009%	46,637
18	21,310	2.208%	73,252
19	4,697	0.487%	106,909
20	1,134	0.117%	119,072
21	149	0.015%	143,720
22	6	0.001%	170,869
<b>Total:-</b>	<b>965,323</b>	<b>100%</b>	<b>23,697</b>

The Tables and Figures below show the distribution of the Active Employees according to Age groups, Past service groups and Pensionable pay groups, of the employees:

**Table No. 2B**

Age Group Wise Distribution of Active Employees				
Age Group			Number	% of Total Number
0	To	19	657	0.1%
20	To	24	51,813	5.4%
25	To	29	160,500	16.6%
30	To	34	172,961	17.9%
35	To	39	150,320	15.6%
40	To	44	102,588	10.6%
45	To	49	109,691	11.4%
50	To	54	128,720	13.3%
55	To	59	83,564	8.7%
60 and above			4,509	0.5%
<b>Grand Total</b>			<b>965,323</b>	<b>100%</b>

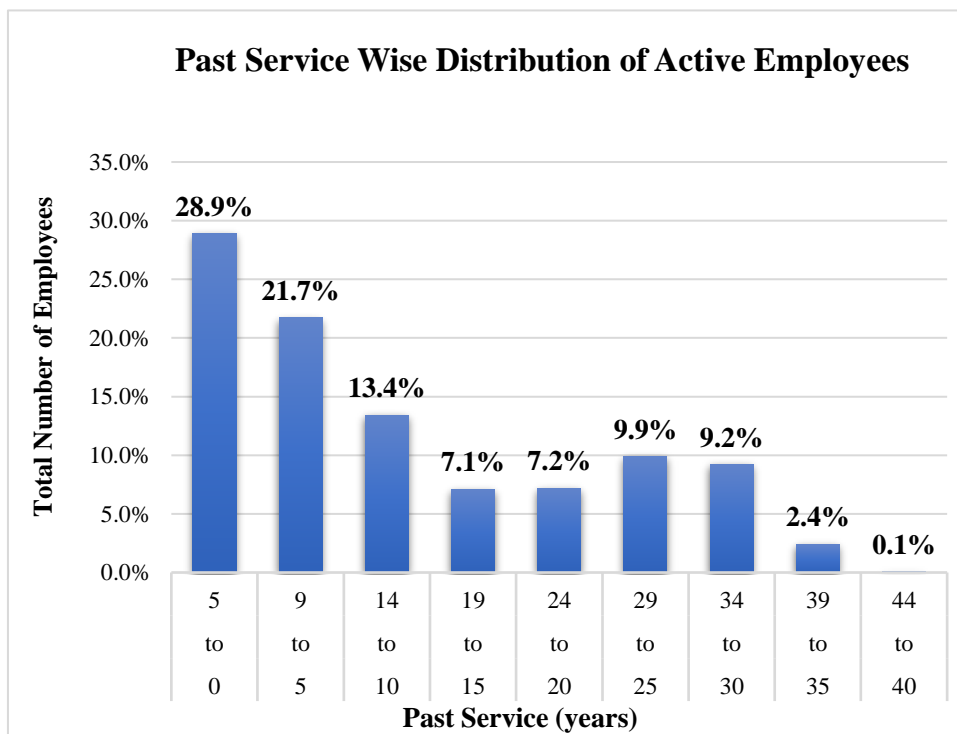
**Figure No. 2B**



**Table No. 2C**

<b>Past Service Wise Distribution of Active Employees</b>				
<b>Past Service (years)</b>			<b>Number</b>	<b>% of Total Number</b>
0	To	5	279,123	28.9%
5	To	9	209,829	21.7%
10	To	14	129,640	13.4%
15	To	19	68,591	7.1%
20	To	24	69,486	7.2%
25	To	29	95,468	9.9%
30	To	34	89,062	9.2%
35	To	39	23,329	2.4%
40	To	44	795	0.1%
45	and Above		-	0.0%
<b>Grand Total</b>			<b>965,323</b>	<b>100%</b>

**Figure No. 2C**

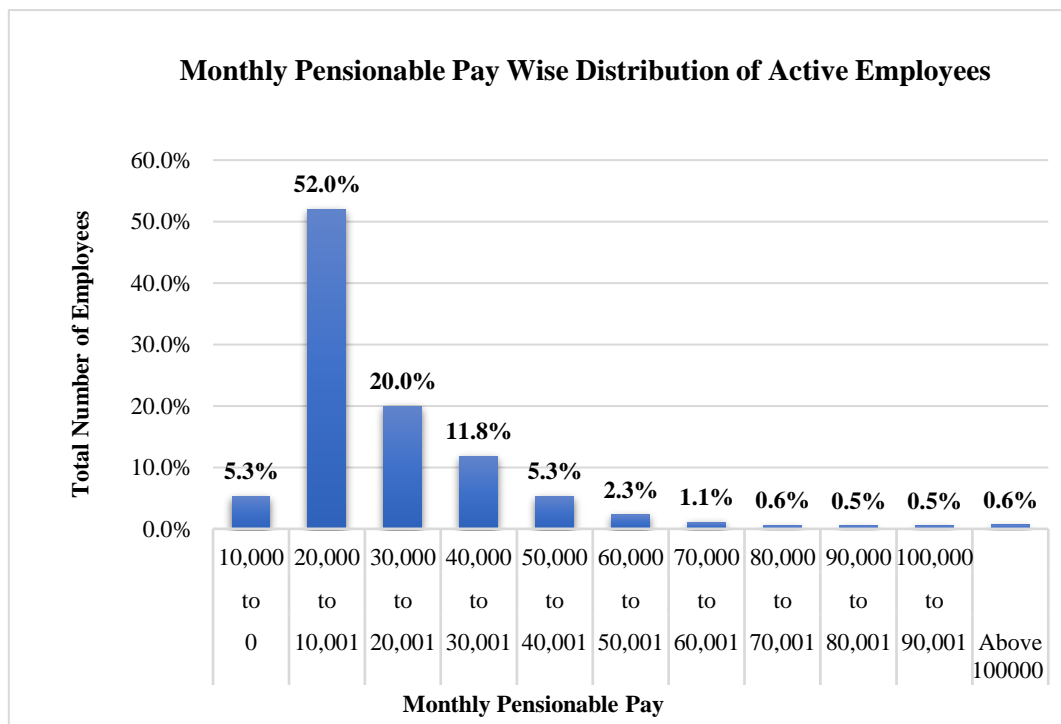




**Table No. 2D**

<b>Monthly Pensionable Pay Wise Distribution of Active Employees</b>				
<b>Monthly Pensionable Pay (Rs.000's)</b>			<b>Numbers</b>	<b>% of Total Number</b>
0	To	10	51,526	5.3%
11	To	20	501,685	52.0%
21	To	30	192,826	20.0%
31	To	40	114,119	11.8%
41	To	50	51,114	5.3%
51	To	60	22,360	2.3%
61	To	70	10,192	1.1%
71	To	80	5,342	0.6%
81	To	90	5,179	0.5%
90	To	100	4,752	0.5%
100 and Above			6,228	0.6%
<b>Grand Total</b>			<b>965,323</b>	<b>100%</b>

**Figure No. 2D**



Details of the distributions according to the age, past service and pensionable pay are provided in Annex I.

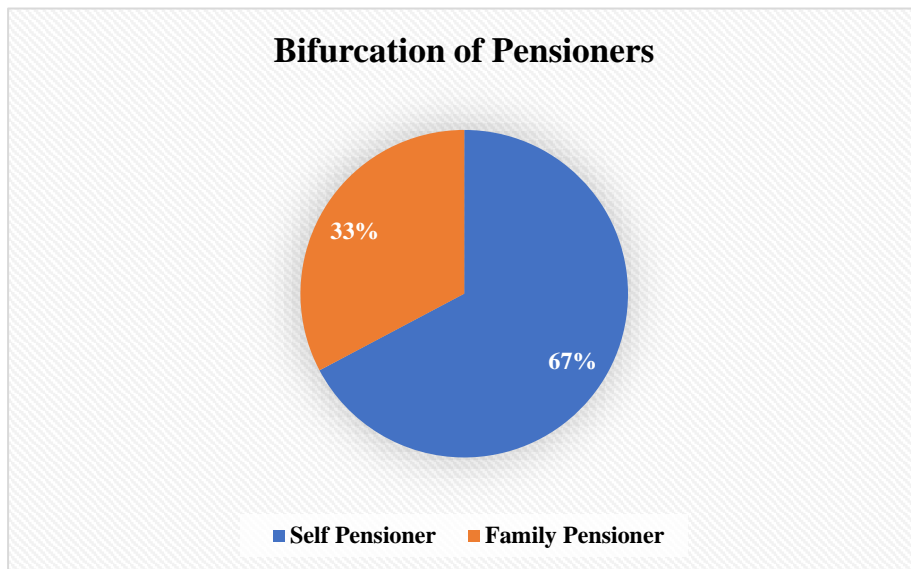
## 2.2 Pensioners

The Table No. 2E below shows the bifurcation of 479,274 Pensioners between Employee Pensioners and Family Pensioners

**Table No. 2E**

Number of Employee Pensioners	322,307
Monthly Pension	Rs. 9,907,705,489
Number of Family Pensioners	156,967
Family Monthly Pension	Rs. 2,928,904,974
<b>Total Pensioners</b>	<b>479,274</b>
<b>Total Monthly Pension</b>	<b>Rs. 12,836,610,463</b>

**Figure No. 2E**

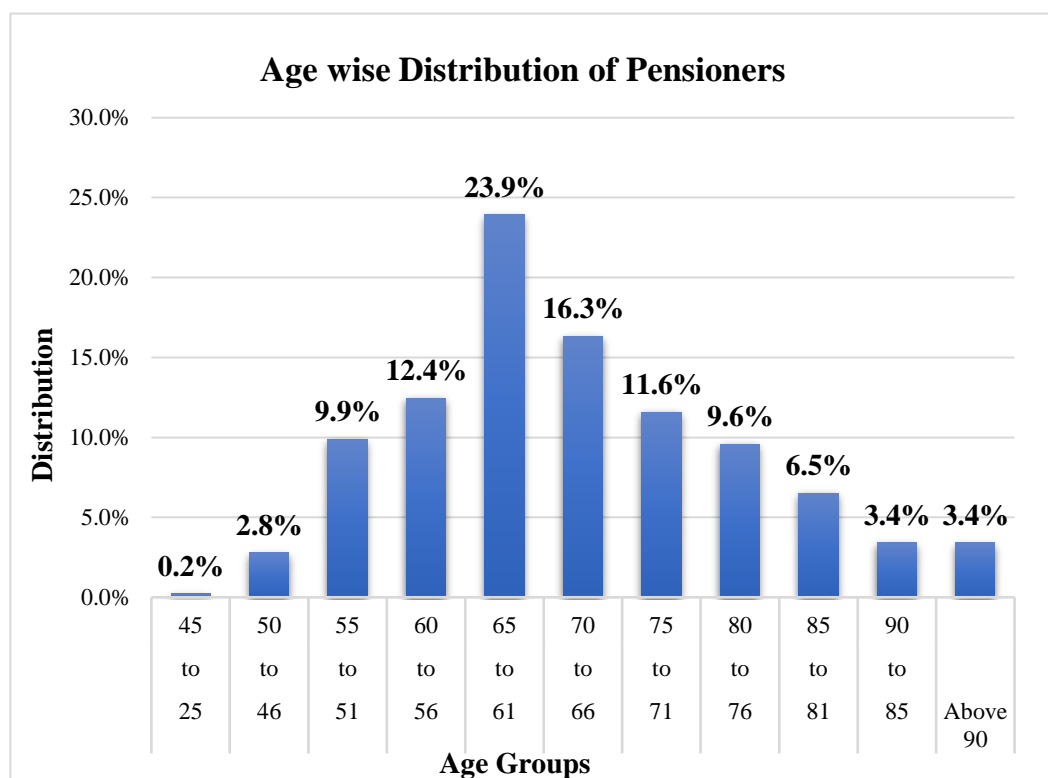


The Tables and Figures below show the distribution of All Pensioners according to Age groups, and Monthly Pension amount groups.

**Table No. 2F**

Age Group Wise Distribution of Pensioners				
Age Group			Number	Distribution
25	to	45	1,045	0.2%
46	to	50	13,288	2.8%
51	to	55	47,302	9.9%
56	to	60	59,642	12.4%
61	to	65	114,662	23.9%
66	to	70	78,213	16.3%
71	to	75	55,537	11.6%
76	to	80	45,817	9.6%
81	to	85	31,147	6.5%
85	to	90	16,292	3.4%
Above 90			16,329	3.4%
<b>Grand Total</b>			<b>479,274</b>	<b>100%</b>

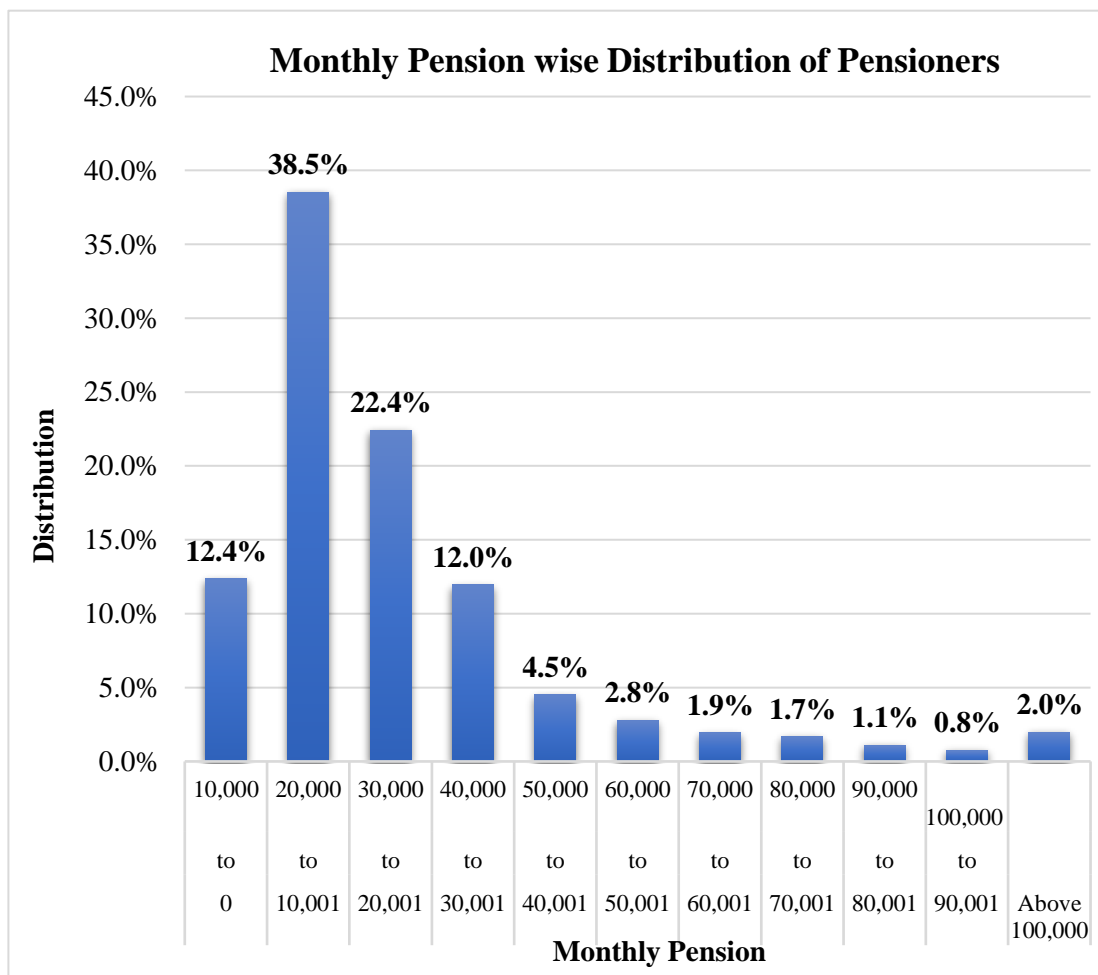
**Figure No. 2F**



**Table No. 2G**

<b>Monthly Pension Amount Wise Distribution of Pensioners</b>				
<b>Monthly Pension Amount</b>			<b>Number</b>	<b>% of Total Number</b>
0	To	10,000	59,223	12.4%
10,001	To	20,000	184,673	38.5%
20,001	To	30,000	107,400	22.4%
30,001	To	40,000	57,274	12.0%
40,001	To	50,000	21,626	4.5%
50,001	To	60,000	13,353	2.8%
60,001	To	70,000	9,331	1.9%
70,001	To	80,000	8,093	1.7%
80,001	To	90,000	5,214	1.1%
90,001	To	100,000	3,601	0.8%
Above 100,000			9,486	2.0%
<b>Grand Total</b>			<b>479,274</b>	<b>100%</b>

**Figure No. 2G**



## SECTION 3

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### 3.1 Assumptions used for the Actuarial Evaluation

The Assumptions used for the purpose of the Actuarial Evaluation comprise of Financial assumptions, Demographic assumptions, and Other General assumptions

The key components, of Financial assumptions are:

- Discount Rate
- Rate of Increase in Pensionable pay
- Rate of Increase in Pensions
- Rate of increase in Medical allowance
- New Entrants for Cash Flow Projections

The key components of Demographic assumptions are:

- Mortality Rate
- Withdrawal Rate
- Disability (Ill-health) Rates
- Early Retirement Rates-assuming retirement after 25years of service, with no age restriction of 55years.

The Other General assumptions relating to:

- Expenses of Management
- Nature of the Group
- The Benefit structure of the Fund
- Immediate (Ad-hoc) Pension Increases for New Retirees

#### 3.1.1 Financial assumptions

##### i. Discount Rate

The Committee of the Pakistan Society of Actuaries (PSoA) on Discount Rate issues recommendations on quarterly basis, as regards the Discount Rates applicable for different weighted average durations of the Pension and Gratuity Funds. While determining these Discount Rates the Committee takes into consideration the yields on PIBs of different terms, issued by the State Bank of Pakistan.

Thus, a Discount Rate of 11.75% is used, which is according to the Committee's Rates recommendations issued as per PSoA GN 4.

##### ii. Rate of Increase in Pensionable pay

The Discount rate and the Rate of increase in Pensionable pay are usually inter-related since during periods of inflation, both tend to rise in conformity with each other.

From actuarial evaluation point of view, it is the difference between these two rates that matters, and not their individual values in isolation.

It has been assumed that the long-term Rate of increase in Pensionable pay will be 10.75% per annum.

The difference of 1% between the Discount Rate and the long-Term Rate of increase in Pensionable pay is considered appropriate and is within the internationally and locally recognized norms.

**iii. Rate of increase in Pension**

The long-term Rate of increase of pension has been assumed as 9.75% per annum. This is based upon past-history of increases/indexation allowed by the Provincial Government from time to time and future expectations because of likely higher future rate of inflation.

**iv. Rate of Increase in Monthly Medical Allowance**

It has been assumed that the monthly Medical Allowance will increase at 5.00% per annum.

**v. New Entrants for Cash Flow Projections**

As in the previous Actuarial valuation, it has been assumed that each year the net increase (allowing for all exits/entrants) in the strength of the total employees will be 1%.

New entrants are assumed as uniformly distributed over ages 20 to 29.

### **3.1.2 Demographic assumptions valuation**

**i. Mortality Rates**

It has been assumed that the Mortality experience of the Active Employees will be according to SLIC (2001-2005) Mortality Table with 1-year set-back.

The Mortality experience of the pensioners has been assumed to correspond to SLIC (2001-2005) Mortality Table with 1 years set-back.

The Mortality experience of the widow pensioners has been assumed to correspond to SLIC (2001-2005) Mortality Table with 4-year set-back.

It has been assumed that the female spouse of a male employee is three years younger than her husband.

Based on the above assumptions the Life Expectancy of the Male at age 60 is till age 82 and for a female at age 60 the Life Expectancy is till age 86.

**ii. Withdrawal, Ill-health, and Early Retirement Rates**

The Active Employee's Withdrawal, Ill-health and Early Retirement Rates used are based on the experience of the Public-sector employee benefit Funds in Pakistan. All the above-mentioned Rates are shown in Annex III.

Early Retirement is after 25 years of service without any condition of the age being 55 years, as are the existing conditions.

## **Other General assumptions**

### **i. Expenses of Management**

As in the previous Actuarial valuation it has been assumed that the expenses for the management of Pension Fund/ would be borne by GoPb, and accordingly no provision has been made in the actuarial evaluation of the liability.

### **ii. Nature of the Group**

To determining the Actuarial Liability a closed Group has been assumed, which means, that there will be no new entrants in the existing group of Active Employees.

However, for the purposes of calculating the Cash Flow Projections, it has been assumed that each year the net increase (allowing for all exits/entrants) in the strength of the total employees will be 1%

New entrants are assumed as uniformly distributed over ages 20 to 29.

### **iii. Benefit Structure under the Existing Pension Scheme**

It has been assumed that the terms and conditions for the payment of benefits under the Existing Pension Scheme will continue. No provision has been made for any changes etc. in the future, which may be made by the Government.

These terms and conditions for the Existing Pension Scheme are given in Annexure IV.

### **iv. Immediate (Ad-hoc) Pension Increases for New Retirees**

Provision has been made while determining the Actuarial Liability of the increase in pension allowed by the Government according to notification No. FD-SR-III-4-202/2019 dated 19<sup>th</sup> July 2019 to the new Retirees as from 1<sup>st</sup> July 2019 also allowing for the previous six increases in pension amounts.

## SECTION 4

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### **Method used for the Actuarial Evaluation of the Pension Fund Liability**

The Actuarial Method used to determine the past service liabilities and contribution rate is known as Projected Unit Credit Method (PUCM). This method is also mandated by the International Public Sector Accounting Standard 39 (IPSAS-39).

PUCM *allocates the projected pension benefit uniformly over the years of total service rendered* (subject to max 30 years). The actuarial present value as at the valuation date of one year's benefit summed for all active employees is called "Current Service Cost (CSC)". 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.



## SECTION 5

### Actuarial Evaluation Results

#### (Deliverable 1)

#### 5.1 Pension Fund Liability for the Active Employees and Pensioners

The Accrued Actuarial Liability for the past service of the Active Employees and all current Pensioners as at 30.06.2019, on the basis of the data provided and the assumptions outlined in Section 3 of this Report, is as shown in Table No.5A below:

**Table No. 5A**

	<b>Accrued Actuarial Liability</b> (Rs. Million)
Accrued Actuarial Liability on account of:	
a) Active Employees	
○ Normal & Early Retirement	3,031,762
○ Family	356,798
○ Invalid	154,985
b) Pensioners	
○ Self	2,471,313
○ Family	543,651
<b>Total Accrued Actuarial Liability as at 30.06.2019</b>	<b>6,598,345</b>
Fund Assets	59,273
<b>Unfunded Accrued Liability</b>	<b>(6,539,072)</b>
Required Contribution Rate, as % age of Pensionable pay, to fund <i>Future Accrual</i> of Benefits	65.01%

Total Accrued liability of the Pension Fund as at 30.06.2019 is **Rs. 6,598.345** billion.

Funding Deficit as at 30.06.2019 works out to **Rs.6,539.072** billion.

To fund the **future** liability as it accrues, the required annual contribution rate payable to the Pension Fund is **65.01%** of pensionable pay.

The Break-up of the overall Contribution Rate of **65.01%** is as follows:

**Table No. 5B**

Type of Benefits			Contribution Rate
Actives	Normal/Early Retirements	Self	35.98%
		Family	6.03%
	Death in Service (Spouse Only)		3.50%
	Death in Service (Other Dependents)		2.76%
	Invalid Retirements	Self	1.24%
		Family	0.91%
	Restoration		10.56%
	Medical Allowance		4.03%
	<b>Total</b>		

## 5.2 Cash Flow Projection of Pension Payments for next 30 years

The Cash Flow Projection of Pension payments comprising all types of pension payments and commutation over the next 30 years, as from the financial year 2019-20, using the assumptions as outlined in Section 3, are as shown in Table No. 5C below;

**Table No. 5C**

Cash Flow Projection of Pension Payments (Rs. Billions)			
Year	Commutation	Pension	Pension + Commutation
2019-20	33.259	192.812	226.071
2020-21	37.549	218.179	255.728
2021-22	46.864	247.839	294.703
2022-23	51.949	280.934	332.883
2023-24	60.246	318.787	379.033
2024-25	67.271	360.823	428.094
2025-26	70.677	406.277	476.954
2026-27	74.095	455.431	529.526
2027-28	86.347	511.050	597.397
2028-29	85.295	569.977	655.272
2029-30	80.255	635.245	715.500
2030-31	79.047	708.696	787.743
2031-32	84.258	789.766	874.024
2032-33	84.872	879.713	964.585
2033-34	87.377	977.986	1,065.363
2034-35	91.598	1,086.835	1,178.433
2035-36	102.272	1,213.409	1,315.681
2036-37	110.953	1,352.374	1,463.327
2037-38	130.520	1,507.393	1,637.913
2038-39	147.957	1,682.545	1,830.502
2039-40	167.443	1,875.193	2,042.636
2040-41	180.512	2,083.773	2,264.285
2041-42	223.492	2,318.701	2,542.193
2042-43	249.945	2,580.948	2,830.893
2043-44	277.952	2,871.266	3,149.218
2044-45	276.434	3,185.126	3,461.560
2045-46	294.163	3,530.257	3,824.420
2046-47	320.866	3,915.047	4,235.913
2047-48	335.289	4,338.355	4,673.644
2048-49	347.668	4,807.377	5,155.045

## SECTION 6

### Sensitivity Analysis of the Pension Fund Liability (Deliverable 1 continued)

To determine the variations in the Pension Fund liability because of changes mainly in the economic assumptions, the liability has been calculated assuming different Discount rates, Percentage increases in Pensionable pay and Expected Rate of increases in Pension. The Results of different Scenarios are shown in the Tables below.

**Table No. 6A**

Scenarios	Assumptions		
	Discount Rate	Expected Increase in Pensionable Pay	Expected Rate of Pension Increase
Base Scenario	11.75%	10.75%	9.75%
Sensitivity-I	<b>12.75%</b>	10.75%	9.75%
Sensitivity-II	<b>10.75%</b>	10.75%	9.75%
Sensitivity-III	11.75%	<b>11.75%</b>	9.75%
Sensitivity-IV	11.75%	<b>9.75%</b>	9.75%
Sensitivity-V	11.75%	10.75%	<b>10.75%</b>
Sensitivity-VI	11.75%	10.75%	<b>8.75%</b>

**Table No. 6B**

	Sensitivity-I Result (Rs. Million)	Sensitivity-II Result (Rs. Million)	Sensitivity-III Results (Rs. Million)
Accrued Pension Liability on account of:			
a) Active Employees	2,982,594	4,361,911	3,903,707
b) Pensioners	2,752,498	3,324,863	3,014,964
<b>Total Liability as at 30.06.2019</b>	<b>5,735,092</b>	<b>7,686,774</b>	<b>6,918,671</b>
Fund Assets	59,273	59,274	59,275
<b>Unfunded Accrued Liability</b>	<b>(5,675,819)</b>	<b>(7,627,500)</b>	<b>(6,859,396)</b>
Required Contribution Rate, as % age of Pensionable pay, to fund <i>Future Accrual</i> of Benefits	50.63%	84.91%	75.53%

	<b>Sensitivity-IV Result</b> (Rs. million)	<b>Sensitivity-V Result</b> (Rs. million)	<b>Sensitivity-VI Results</b> (Rs. million)
Accrued Actuarial Liability on account of:			
a) Active Employees	3,302,246	4,004,341	3,232,145
b) Pensioners	3,014,964	3,324,863	2,752,498
<b>Total Liability as at 30.06.2019</b>	<b>6,317,210</b>	<b>7,329,204</b>	<b>5,984,643</b>
Fund Assets	59,276	59,277	59,278
<b>Unfunded Accrued Liability</b>	<b>(6,257,934)</b>	<b>(7,269,927)</b>	<b>(5,925,365)</b>
Required Contribution Rate, as %age of Pensionable pay, to fund <i>Future Accrual</i> of Benefits	56.32%	73.14%	58.34%

The following Table No.6C summarises the effect of various Scenarios on the Pension Fund liability as at 30.06.2019 and the Contribution Rate as % age of Pensionable pay to fund Future Accrual of Benefits.

**Table No. 6C**

<b>Scenarios</b>	<b>Accrued Pension Liability as at 30.06.2019 (Rs. million)</b>	<b>Required Contribution Rate, as %age of Pensionable pay, to fund <i>Future Accrual</i> of Benefits</b>
<b>Base Scenario</b>	<b>6,598,345</b>	65.01%
<b>Sensitivity – I</b>	5,735,092	50.63%
<b>Sensitivity – II</b>	7,686,774	84.91%
<b>Sensitivity – III</b>	6,918,671	75.53%
<b>Sensitivity – IV</b>	6,317,210	56.32%
<b>Sensitivity – V</b>	7,329,204	73.14%
<b>Sensitivity – VI</b>	5,984,643	58.34%

## SECTION 7

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### Observations and Funding Strategy

#### (Deliverable 2)

#### 7.1 Observations

1. The Actuarial Evaluation was performed using the data of the Active employees and the Pensioners provided by the PPF. This data was made available in the shortest possible time and the accuracy of the data seemed to be most reasonable.
2. The Cash Flow Projections were made of the Pension and commutation payments for the next thirty years and the Results are shown in Section 5.

It will be seen that the Outgo increases rapidly over the years. For the year 2019-20 this amount is estimated to be Rs 226.071 billion whereas for the year 2048-49 this estimated amount is Rs 5,155.045 billion.

3. The Total accrued Actuarial Liability of the Pension Fund as at 30.06.2019 is determined to be Rs.6,598.345 billion.

The Liability relating to past service of the Active Employees is Rs. 3,583.381 billion (54%) and the remaining Liability of Rs. 3,014.964 billion pertain to all categories of Pensioners. Nearly 49.2% of the Pensioners are aged 65years or below.

4. Overall, the accrued Actuarial Liability has increased substantially because of the notification of the Government to allow previous six increases in the pensions to the new retirees as well, from 1st July 2019. Only because of this concession the normal Net Pension payable to the new retiree has increased by 81%.

#### 7.2 Funding options

##### 7.2.1 Previous Funding Strategies

Following funding strategy was approved and described in the previous valuation report as at 30-6-2015.

- i. Future contributions should be linked to total Revenues at the rate of 1% of Revenues for the next 15 years.
- ii. 19% of Revenues be paid to PPF from year 16 onwards.
- iii. The PPF would continue its accumulation stage for 15 years and then start to meet all pension benefit obligations of the GoPb.

- iv. 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.

The Funding Strategy recommended above, and the Strategies recommended in the earlier Reports have never been followed strictly. Payments as specified in the Reports have not been made to the Fund. Only ad hoc token amounts have been paid in different years, depending on the availability of surplus funds with the Government.

### **7.2.2 Recommended Future Funding Strategy**

It will be seen that over the years it has not been possible by the Government to follow the recommended Funding Strategies mainly because of financial constraints. These financial constraints are very likely to continue in future, as well, and thus there is no reason to continue following similar types of Strategies.

For a normal Pension Fund of any Organisation it would be prudent to set up a Pension Fund which should always be adequate to meet the Actuarial Liability of the benefits payable to the existing members of the Fund. This is purely necessary to guarantee the payment of future cash benefits and pensions to the employees, even in the event the Organisation becomes insolvent

In our opinion, for a Pension Scheme for Civil Servants, where benefits are guaranteed by the Government, it is not prudent that the Scheme should be fully Funded, especially when the Government is already borrowing funds for current and developmental expenses. Such a type of Funding Strategy is only feasible where the Government have surplus funds or there are specific donations from foreign donors for this purpose.

In the case of Pakistan, where we already have a huge debt burden, we do not see any logic in using borrowed money to build up a Pension Fund.

Thus, it is suggested that the payment to the Pension Fund each year should be on 'Pay as You Go' basis and all future pension payments should be made from the Pension Fund. We may also mention that the above recommended Funding method is being followed even in quite several economically developed countries.

Under this Method, at the time of each Actuarial Study of the Pension Liabilities after every three years, the Consultant may recommend an annual Rate of contribution, as percentage of the Provincial Revenue, which should be payable to the Pension Fund during the next three years. This contribution should be paid to the Fund each year and all pension payments will be debited to the Fund. Any surplus money in the Fund not immediately required for payment of the benefits, will be invested to earn maximum interest.

The existing Fund can continue and will be a buffer for any temporary future shortfall in the receipts and expenditure of the Fund.

### Annual Contribution Rate on ‘Pay as You Go’ Funding basis.

On the basis of our study/analysis of the past experience and future projections of the expected Government Revenues, and Pensions outgo, and making necessary provision for likely variations in the assumptions, we are of the opinion that a Contribution of **18.5%** of the Government Revenue each year over the next three years, beginning from 2020-21, to the Pension Fund, will be adequate to meet the Pension expenditure during this period.

On necessary Funds being transferred to the Pension Fund, all Pension expenditure should be debited to the Fund. The Fund will continue to invest the surplus moneys in secure investments, with highest returns.

The suggested Contribution rate may be reviewed at the next Actuarial evaluation of the Pension Fund, by the then appointed Consultants.

The following Table No.7A summarises the Pension Payments against projected Government Revenue for next 20 years:

**Table No. 7A**

Rs. Billion

Year	Commutation	Annual Pension	Total Pension Payments	Projected Revenue*	Pension Expense as % of Revenue
2019-20	33.3	192.8	226.1	1408.4	16.1%
2020-21	37.5	218.2	255.7	1549.2	16.5%
2021-22	46.9	247.8	294.7	1704.2	17.3%
2022-23	51.9	280.9	332.9	1874.6	17.8%
2023-24	60.2	318.8	379.0	2062.0	18.4%
2024-25	67.3	360.8	428.1	2268.2	18.9%
2025-26	70.7	406.3	477.0	2495.1	19.1%
2026-27	74.1	455.4	529.5	2744.6	19.3%
2027-28	86.3	511.1	597.4	3019.0	19.8%
2028-29	85.3	570.0	655.3	3320.9	19.7%
2029-30	80.3	635.2	715.5	3653.0	19.6%
2030-31	79.0	708.7	787.7	4018.3	19.6%
2031-32	84.3	789.8	874.0	4420.2	19.8%
2032-33	84.9	879.7	964.6	4862.2	19.8%
2033-34	87.4	978.0	1065.4	5348.4	19.9%
2034-35	91.6	1086.8	1178.4	5883.2	20.0%
2035-36	102.3	1213.4	1315.7	6471.6	20.3%
2036-37	111.0	1352.4	1463.3	7118.7	20.6%
2037-38	130.5	1507.4	1637.9	7830.6	20.9%
2038-39	148.0	1682.5	1830.5	8613.6	21.3%

\*It has been assumed that long-term growth in Government Revenue would not be less than 10% per annum from FY2020-21 onwards.



## SECTION 8

### Disclosures as per IPSAS-39 (Deliverable 3)

*All figures given  
are in Rupees  
Million*

<b>Financial Year 2018-19</b>
<b>Funded Pension Scheme</b>

#### Statement of Financial Position as at Beginning of the Period

Present Value of Defined Benefit Obligations as at the Beginning of the Period	6,015,986
<i>Less</i> Fair Value of Plan Assets	(51,345)
<b>Defined Benefit Liability as at the Beginning of the Period</b>	<b>5,964,641</b>

#### Statement of Financial Position as at End of the Period

Present Value of Defined Benefit Obligations as at End of the Period	6,598,345
<i>Less</i> Fair Value of Plan Assets	(59,273)
<b>Defined Benefit Liability as at End of the Period</b>	<b>6,539,072</b>

#### Statement of Financial Performance

Service Cost	178,236
Net Interest on Net Defined Benefit Liability (Asset)	597,985
Remeasurements Cost	-
<b>Total Amount Chargeable to P&amp;L Account</b>	<b>776,221</b>

#### Reconciliation of Present Value of Defined Benefit Obligations

Present Value of Defined Benefit Obligations as at the Beginning of the Period	6,015,986
Service Cost (Current Service Cost + Past Service Cost + Gains/Losses on Settlements)	178,236
Interest on Defined Benefit Obligation	604,314
Benefits Paid	(205,129)
Actuarial (Gains)/Losses	4,938
<b>Present Value of Defined Benefit Obligations as at End of the Period</b>	<b>6,598,345</b>

### Reconciliation of Fair Value of Plan Assets

Fair Value of Plan Assets as at the Beginning of the Period	51,345
Total Contributions made during the Year	5,033
Interest Income during the year	6,329
Benefits Paid during the Year	-
Return on Plan Assets excluding Interest Income	(3,434)
<b>Fair Value of Plan Assets as at End of the Period</b>	<b>59,273</b>

### Remeasurements of Net Defined Benefit Liability

Actuarial (Gains)/Losses due to changes in Demographic Assumptions	-
Actuarial (Gains)/Losses due to changes in Financial Assumptions	-
Actuarial (Gains)/Losses due to experience adjustments	4,938
Return on Plan Assets	3,434
Effect of Changes in Asset Ceiling	-
<b>Amount Chargeable to Other Comprehensive Income (OCI)</b>	<b>8,372</b>

### Reconciliation of Net Defined Benefit Liability

Defined Benefit Liability as at the Beginning of the Period	5,964,641
Cost Chargeable to P&L during the Period	776,221
Cost Chargeable to OCI	8,372
Benefits paid directly by the Government	(205,129)
Contribution/Benefits Paid	(5,033)
<b>Net Defined Benefit Liability as at End of the Period</b>	<b>6,539,072</b>

### Statement of Financial Performance for the Next Year

Service Cost	180,920
Net Interest on Net Defined Benefit Liability (Asset)	755,059
Remeasurements Cost	
<b>Total Amount Chargeable to P&amp;L Account</b>	<b>935,979</b>

## SECTION 9

### Recommended Pension Reforms As from 1st July 2021

#### (Deliverable 5 and 7)

The recommended Pension Reforms mentioned in the Executive Summary are shown here in Tabular form for Comparison purposes.

In Table 9A below it will be seen that the biggest reduction (**35.98%**) in Accrued Liability can be achieved by not paying the total Ad-hoc pension increases to the Pensioners as from 1st July 2021, and also if no Medical Allowance is payable, the total reduction in Accrued Liability will be **42.71%**.

However, if there is a Gradual reduction in Ad-hoc pension increases and no Medical Allowance is payable, the Accrued Liability will reduce by **27.10%**. and the future Contribution rate will reduce to **36.33%**.

In case the Options 5 and 6 are effected simultaneously, there will be an overall reduction in Accrued Liability of **27.90%** and the Contribution rate will reduce to nearly **33.58%**

The reduction in ad-hoc increase each year just for future retirees, assumed to be effective from 2021-22 is as shown below:

Year	Ad-hoc Pension Increases used
2019-20	15%, 7.5%, 10%, 10%, 10%, 10%
2020-21	15%, 7.5%, 10%, 10%, 10%, 10%
2021-22	7.5%, 10%, 10%, 10%, 10%
2022-23	10%, 10%, 10%, 10%
2023-24	10%, 10%, 10%
2024-25	10%, 10%
2025-26	10%
2026-27 onwards	0%

**Table No. 9A**

	Total Accrued Liability as at 30.06.2019 (Rs. million)	Reduction in Total Accrued Liability (Rs. million)	Percentage Reduction in Total Accrued Liability	Contribution Rate
<b>Pension Scheme with Existing Benefits</b> (Early Retirement after 25 years of service)	6,598,345			65.01%
<b>Pension Reforms Options</b>				
<b>1.</b> Early Retirement after 25 years of service or age 55 years, whichever is later.	6,556,277	42,068	0.64%	63.20%
<b>2.</b> Immediate Reduction in Ad-hoc Pension Increase.	4,224,024	2,374,321	35.98%	35.36%

3. Gradual Reduction in Ad-hoc Pension increase	5,254,576	1,343,769	20.37%	40.63%
4. No Medical allowance payable for future retirees.	6,154,261	444,084	6.73%	60.71%
5. Gradual Reduction in Ad-hoc Pension increase and No Medical allowance payable for future retirees	4,810,492	1,787,853	27.10%	36.33%
6. Increase in Retirement age of one year each year as from 1st July 2021 to 65 years, with pension accrual rate being 2% after age 60	6,545,461	52,884	0.80%	57.30%

### 9.1 Comparison of Cash Flow Projection of Pension Expenditure during next 10 years for different Reform Options

**Table No. 9B**

	Base Scenario	Reforms					
		Option 1	Option 2	Option 3	Option 4	Option 5	Option 6
Year	Total Payments Rs. Billion						
2019-20	226.1	226.1	226.1	226.1	226.1	226.1	226.1
2020-21	255.7	252.3	251.4	252.9	254.6	251.7	222.6
2021-22	294.7	290.7	284.5	288.6	291.9	285.9	271.0
2022-23	332.9	326.6	315.4	322.0	328.2	317.4	296.0
2023-24	379.0	366.7	352.2	361.3	372.0	354.3	313.0
2024-25	428.1	410.5	390.4	401.3	418.3	391.5	344.6
2025-26	477.0	455.8	427.3	439.9	464.0	426.9	381.4
2026-27	529.5	505.3	466.6	480.9	513.1	464.4	434.6
2027-28	597.4	568.8	518.7	534.7	576.7	514.0	484.5
2028-29	655.3	623.4	559.8	577.4	630.0	552.2	543.2
<b>Total</b>	<b>4,175.7</b>	<b>4,026.1</b>	<b>3,792.5</b>	<b>3,885.1</b>	<b>4,075.0</b>	<b>3,784.4</b>	<b>3,517.0</b>
<b>Reduction</b>		<b>3.6%</b>	<b>9.2%</b>	<b>7.0%</b>	<b>2.4%</b>	<b>9.3%</b>	<b>15.8%</b>

**9.2 Comparison of Cash Flow Projection of Pension Expenditure (separately for commutation and annual pension) during next 10 years for different Reform Options**

**Table No. 9C**

Rs. Billion

Year	Base Scenario		Reforms					
			Option 1		Option 2		Option 3	
	Commutation	Annual Pension	Commutation	Annual Pension	Commutation	Annual Pension	Commutation	Annual Pension
2019-20	33.3	192.8	33.3	192.8	33.3	192.8	33.3	192.8
2020-21	37.5	218.2	34.6	217.7	37.5	213.9	37.5	215.4
2021-22	46.9	247.8	43.9	246.8	46.9	237.7	46.9	241.8
2022-23	51.9	280.9	47.7	278.9	51.9	263.5	51.9	270.1
2023-24	60.2	318.8	52.1	314.6	60.2	292.0	60.2	301.1
2024-25	67.3	360.8	56.8	353.7	67.3	323.1	67.3	334.0
2025-26	70.7	406.3	59.9	395.9	70.7	356.6	70.7	369.2
2026-27	74.1	455.4	63.6	441.7	74.1	392.5	74.1	406.8
2027-28	86.3	511.1	75.2	493.5	86.3	432.4	86.3	448.3
2028-29	85.3	570.0	74.7	548.7	85.3	474.5	85.3	492.1

Rs. Billion

Year	Reforms					
	Option 4		Option 5		Option 6	
	Commutation	Annual Pension	Commutation	Annual Pension	Commutation	Annual Pension
2019-20	33.3	192.8	33.3	192.8	33.3	192.8
2020-21	37.5	217.0	37.5	214.2	11.5	211.1
2021-22	46.9	245.1	46.9	239.0	37.1	233.9
2022-23	51.9	276.3	51.9	265.4	38.7	257.4
2023-24	60.2	311.8	60.2	294.1	35.5	277.5
2024-25	67.3	351.0	67.3	324.3	41.7	302.9
2025-26	70.7	393.4	70.7	356.3	43.1	338.3
2026-27	74.1	439.0	74.1	390.3	54.3	380.3
2027-28	86.3	490.4	86.3	427.6	58.3	426.2
2028-29	85.3	544.7	85.3	466.9	65.8	477.5

### 9.3 Percentage Reduction in Cash Flow Projection of Pension Expenditure during next 10 years for different Reform Options

**Table No. 9D**

Year	Reforms					
	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6
	<b>Reduction in Total Payments</b>					
<b>2019-20</b>	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
<b>2020-21</b>	1.33%	1.68%	1.10%	0.43%	1.56%	12.94%
<b>2021-22</b>	1.36%	3.46%	2.07%	0.95%	2.99%	8.04%
<b>2022-23</b>	1.89%	5.26%	3.27%	1.41%	4.66%	11.08%
<b>2023-24</b>	3.25%	7.07%	4.67%	1.85%	6.52%	17.41%
<b>2024-25</b>	4.11%	8.81%	6.26%	2.29%	8.55%	19.50%
<b>2025-26</b>	4.44%	10.42%	7.78%	2.73%	10.50%	20.04%
<b>2026-27</b>	4.57%	11.88%	9.18%	3.10%	12.29%	17.92%
<b>2027-28</b>	4.79%	13.17%	10.50%	3.47%	13.96%	18.90%
<b>2028-29</b>	4.87%	14.57%	11.89%	3.86%	15.73%	17.11%
<b>Total %age reduction in Pension expenditure during 10 Years</b>	<b>3.58%</b>	<b>9.18%</b>	<b>6.96%</b>	<b>2.41%</b>	<b>9.37%</b>	<b>15.77%</b>

## SECTION 10

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### **Pension Scheme Options for New Entrants (as from 1-7-2021)**

#### **(Deliverable 6)**

The salary scales for new and existing employees are likely to be the same at all times and therefore it would be more appropriate from administrative and equity points of view, that the Pension Scheme for new employees should be on non-contributory basis with all costs being payable by the Punjab Government. However, it is essential that any of the new Scheme to be introduced should be financially sustainable and adequately beneficial for the Employees.

It is recommended that for New Entrants the Retirement age should be increased to at least 65 years, because of expected increase in life expectancy over the years and the individuals likely to have longer working span.

The different Pension Scheme Options are suggested below for necessary consideration.

#### **a) Reformed Defined Benefit Pension Scheme (RDB)**

Main terms and conditions of this **Defined Benefit Pension** Scheme are suggested to be as follows:

- Retirement age 65 years
- Pension as 2.00% of the of Pensionable pay after 35 years of service.
- Pensionable pay will be the average of such pay during the last 36 months of service or death.
- Employees retiring before 10 years of service will not be allowed any gratuity or pension.
- Employees retiring after 10 years but less than 25 years of service, will be paid gratuity at the rate of one-month Pensionable pay, for each year of service.
- Employees retiring after 25 or more years of service, before retirement age 65 years, will be allowed an actuarially reduced basic pension. However, in lieu of the reduced pension, commencing immediately, he will have the option to take the full basic pension as from age 65. The basic pension being calculated as 2.00% of the Pensionable pay for each year of service.
- Option to commute up to 35% of the Pension.
- The Commutation Factors will be calculated using sound Actuarial basis, considering the annual increase in the pension and the payments to the Widow/widowers and Children.
- There will be no Restoration of the Commuted portion of the pension at any stage.

- In case of Death while in Service the benefits payable will be as follows:
  - a) If service is less than 5 years:  
Nil Benefit
  - b) If service is greater than 5 but less than 25 years:  
A lump sum gratuity, at the rate of one-month Pensionable pay, for each year of service. The Pensionable pay, as defined above, being the average of the last 36 months pay, before the date of death.
  - c) If service is greater than 25 years  
75% of the Basic pension is payable to the Widow/widower. The Basic pension will be 2.00% of the Pensionable Pay for each year of service, subject to a maximum service period of 35 years.  
In case of death of the Widow/widower, all the dependent children, up to the age of 18 years will be paid in total 75% of the actual pension being paid to the Widow/widower.
- In case of death of the retired Employee, Widow/widower will be paid only 75% of the pension being actually paid to the Employee.
- In case of death of the Widow/widower, all the dependent children up to the age of 18 years will be paid in total 75% of the actual pension being paid to the Widow/widower.
- All types of Pensions being paid will be increased each year by 5% or by the increase in Consumer Price Index (CPI), whichever is lower.

This Scheme can be fully funded by paying annually 21% of the pay of each New Employee appointed as from 1<sup>st</sup> July 2021 onwards to a Special Pension Fund.

#### **b) Defined Contribution Pension Scheme (DC Schemes)**

Under this arrangement a certain percentage of the pay of each employee is paid into his Fund, generally known as Individual Pension Fund (IPF). At the date of retirement at age 65 years there will be an Option to receive 35% of the accumulated value of IPF in Cash and the remaining amount to be used to buy an Increasing Annuity with benefits for Widow/widower/children in the Open market from a Life Insurance Company or this amount can be placed with a Mutual Fund, under a Drawdown Arrangement.

All the IPFs will be invested in a Managed Fund, similar to a Mutual Fund. Thus, in this case the fate of the Employee relating to the accumulated amount available at retirement will wholly depend on the performance of the Fund Managers and also the then market conditions. Further the amount of Pension for any retiree will depend on the market and other financial conditions at the time of retirement and the rates being offered by the Insurance companies.



Here, the Government will be paying contributions on behalf of the New Employees thus the accumulated Fund in respect of each employee at retirement age should be adequate to purchase a Pension, with somewhat similar benefits as for the above mentioned Reformed DB Scheme. This is only possible with different Contribution rates for each group of entry ages of the Employees.

The suggested Contribution rates as percentage of the annual pay for different age groups of the New Entrants are as follows:

Up to 25years	16.5%
26 to 30 years	17.5%
31 to 35 years	20.0%
36 to 40 years	22.5%
41 to 45 years	25.0%

Main terms and conditions of this **Defined Contribution Pension** Scheme are suggested to be as follows:

- Employees leaving service at age 65 years or earlier will be entitled to benefits depending on the length of service
  - a) Service less than 10years

Nil Benefit.
  - b) Service 10 years or more but less than 25 years

75% of the accumulated amount in the IPF of the Employee.
  - c) Service 25 years or more

Option to take as Cash 35% of the Total accumulated amount in the IPF and the remaining amount to be used for the purchase of an Increasing Annuity with benefits for Widow/widower/Children, from an Insurance Company.
- Death of the Employee while in service

The Widow/widower/Children will be entitled to following benefits according to length of service of the deceased employee.

- a) Service less than 25years

The accumulated amount in the IPF of the Employee.

b) Service 25 years or more

Option to take as Cash 35% of the Total accumulated amount in the IPF and the remaining amount to be used by the Widow/widower for the purchase of an Increasing Annuity with benefits also for Children.

• Permanent disability of the Employee while in service

In the event an employee becomes permanently disabled, due to accident or sickness, at any time before normal retirement age, he shall be paid the Total accumulated amount in his IPF.

**d) Hybrid Pension Scheme (Combination of DB and DC Schemes)**

This is an arrangement where the New Employees leaving service at Retirement age 65 or before will be guaranteed to receive 50% of the pension and other benefits payable under the Reformed Defined Benefit Scheme (RDB), as mentioned above.

To cater for the remaining 50% of the pension and other benefits payable under RDB Scheme, a one half of the Contribution Rate as specified for the suggested DC Scheme, will be paid by the Government into his Individual Pension Fund.

All other terms and conditions as mentioned above for the RDB and DC Schemes will also be applicable, in this case.

The Employee on leaving Service because of his own free will, Permanent Disability, Death or Retirement at age 65, will be entitled to 50% of the Benefits as suggested for the RDB Scheme plus 50% of the Benefits as suggested for the DC Scheme.

## **General Remarks**

We hope our above determination of the Accrued Liability of the Pension Fund as at 30.06.2019 and the different Reform options recommended by us will be considered useful in making the existing Defined Benefit Scheme financially sustainable, on long term basis.

In our opinion, the Government of Punjab may, as soon as possible, consider the introduction of the New Scheme for the new entrants based on our recommendations in this Report.

We very much appreciate the efforts made by the General Manager and his colleagues in making the relevant data, of much increased accuracy, available in the shortest possible time and also for the valuable suggestions given, from time to time.

Please feel free to contact us as and when necessary in respect of any matter relating to this Report.

With all the good wishes in your efforts in the implementation of the Reforms.

**Chaudhary Mohammad Anwar FIA, FPSoA, FLMI**  
Chief Executive Officer and Chief Actuary

## ANNEX I

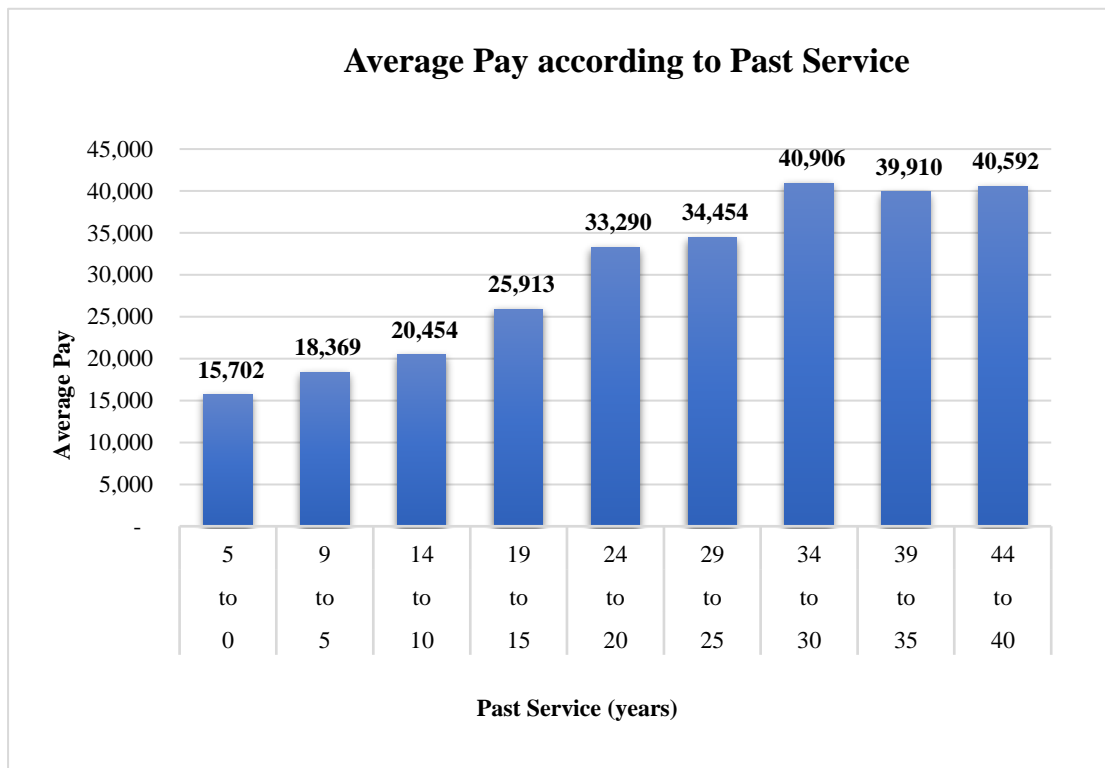
### Active Employees

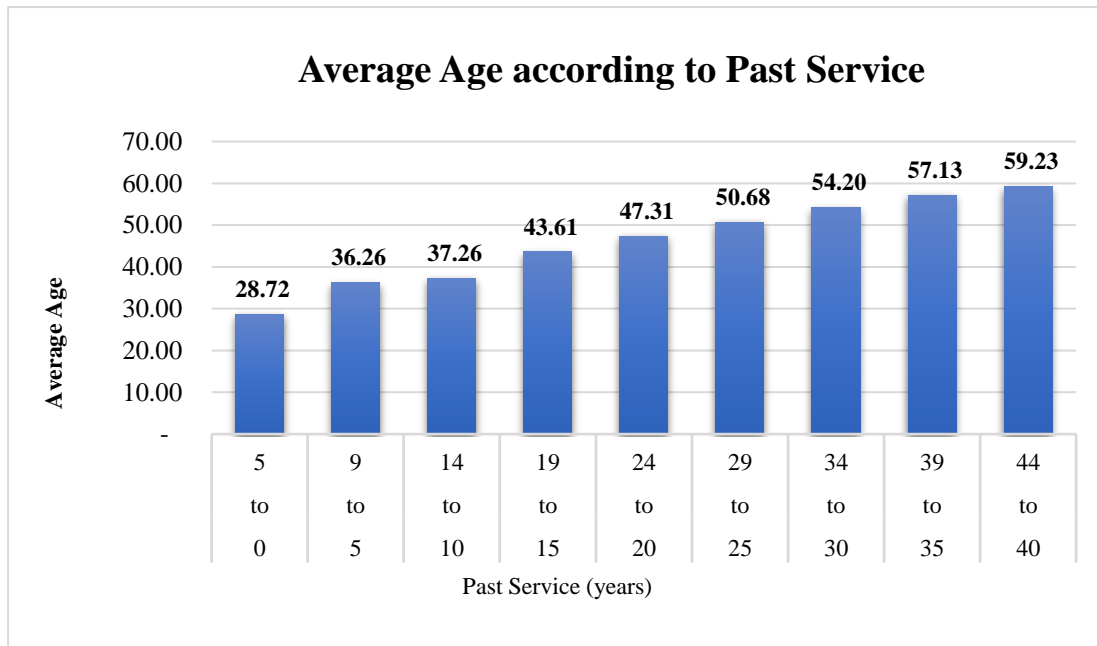
**For each Age, Number of Employees, Average Monthly pay, Average Past Service and Percentage Number according to Age.**

Age	Number	Avg. Monthly Pay	Avg. PS	% of Total Number
18	20	9,316	0.3	0.002%
19	637	10,469	0.5	0.066%
20	3,104	11,063	1.0	0.322%
21	6,219	11,237	1.4	0.644%
22	8,828	11,480	1.9	0.915%
23	14,972	12,657	2.2	1.551%
24	18,690	13,988	2.4	1.936%
25	25,870	15,017	2.5	2.680%
26	31,841	15,861	2.7	3.298%
27	36,066	16,343	3.1	3.736%
28	31,943	16,668	3.8	3.309%
29	34,780	16,683	4.4	3.603%
30	34,253	16,973	5.2	3.548%
31	35,908	17,281	6.0	3.720%
32	35,265	17,871	7.0	3.653%
33	34,470	18,435	7.7	3.571%
34	33,065	19,043	8.5	3.425%
35	32,868	20,373	9.5	3.405%
36	33,592	19,831	9.7	3.480%
37	31,869	19,870	10.3	3.301%
38	25,079	20,204	10.8	2.598%
39	26,912	20,434	11.7	2.788%
40	21,942	21,036	11.7	2.273%
41	22,346	21,134	12.4	2.315%
42	18,924	22,003	13.2	1.960%
43	19,934	22,289	14.1	2.065%
44	19,442	22,783	15.2	2.014%
45	19,780	24,048	16.6	2.049%
46	21,001	25,929	18.5	2.176%
47	22,445	27,525	19.9	2.325%
48	21,609	29,392	21.6	2.239%
49	24,856	30,354	23.0	2.575%
50	26,518	32,588	24.4	2.747%
51	28,849	33,785	25.6	2.989%
52	24,360	35,221	26.6	2.524%
53	24,641	36,670	27.7	2.553%
54	24,352	38,044	28.5	2.523%
55	22,043	39,057	29.3	2.283%
56	19,029	40,473	29.9	1.971%
57	17,343	42,161	30.5	1.797%
58	12,991	44,471	31.1	1.346%
59	12,158	45,153	31.5	1.259%
60	4,509	47,135	31.6	0.467%
<b>Total</b>	<b>965,323</b>	<b>23,697</b>	<b>13.5</b>	<b>100%</b>

**Average Monthly pay and Average Age according to Past Service**

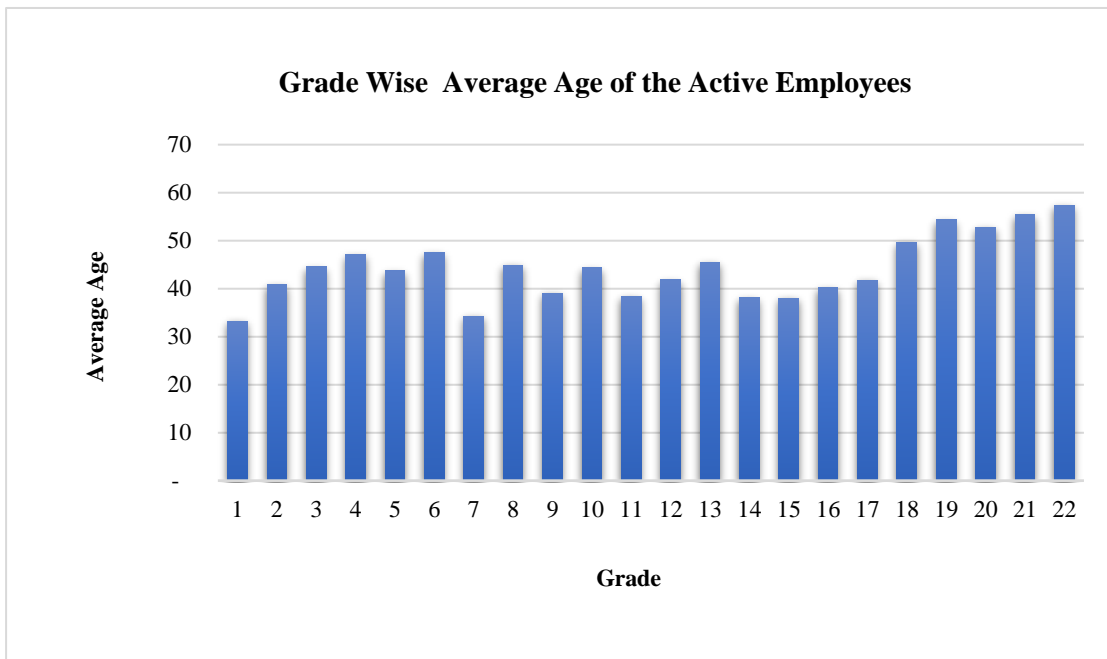
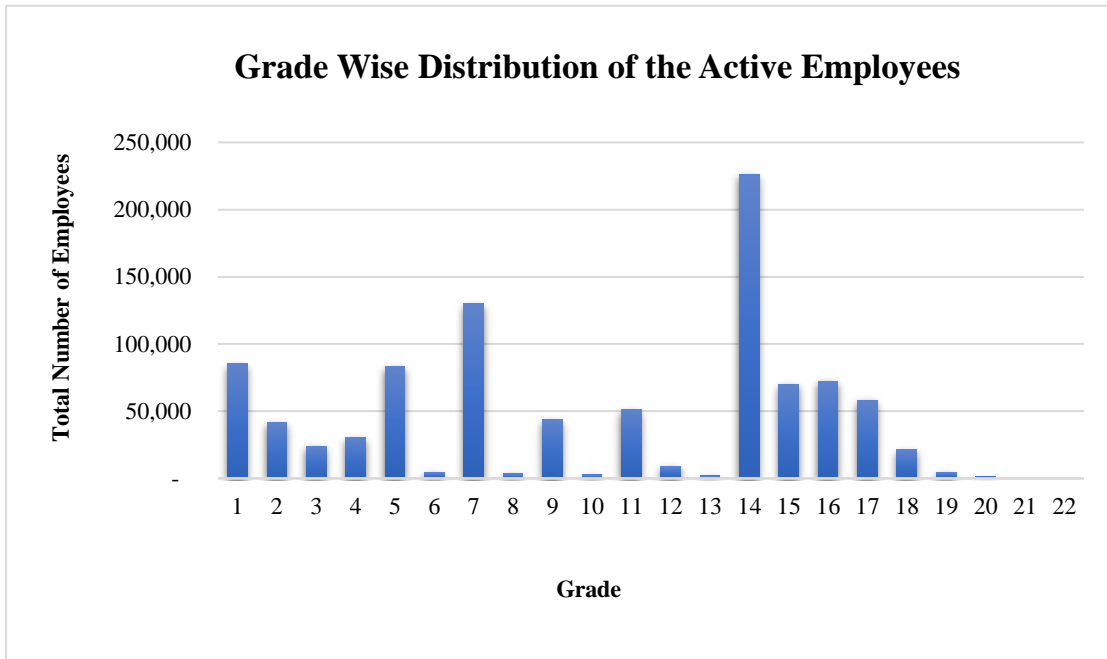
Service (years)			Average Monthly Pay	Average Age
0	to	5	15,702	28.72
5	-	10	18,369	36.26
10	-	15	20,454	37.26
15	-	20	25,913	43.61
20	-	25	33,290	47.31
25	-	30	34,454	50.68
30	-	35	40,906	54.20
35	-	40	39,910	57.13
40	-	45	40,592	59.23

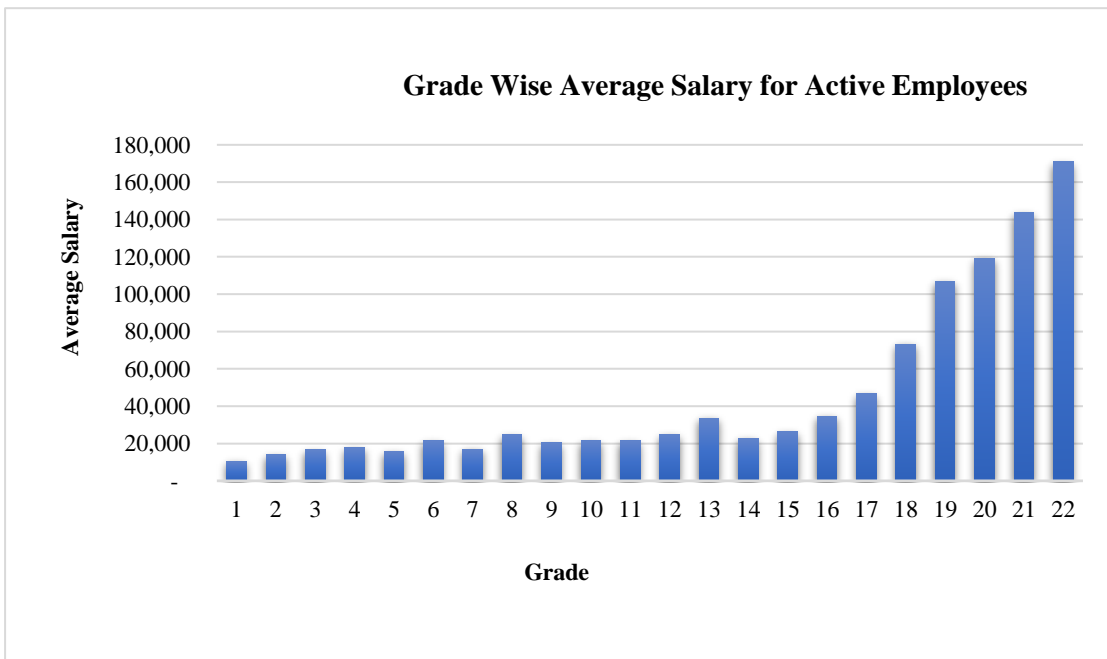
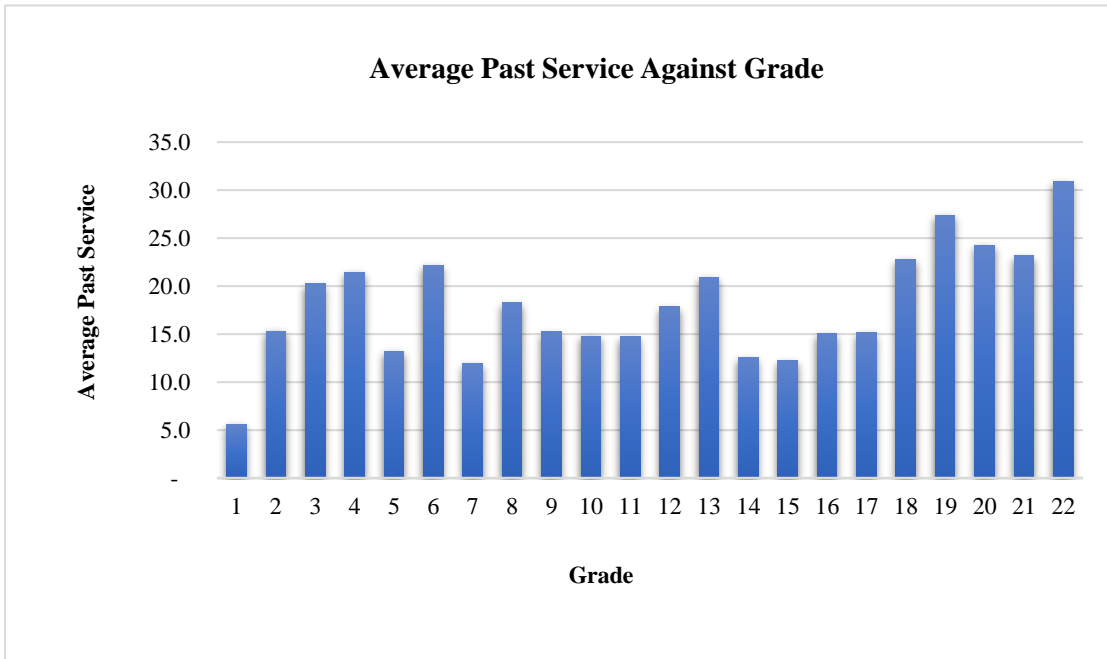




**For each Pay Grade, Number of Employees, Average Monthly pay, Average age, Average Past Service and Percentage in each Pay Grade.**

Grade	Number in Grade	Avg. Monthly Pay	Average Age	Average Past Service	% of Total Number
1	85,407	10,367	33	5.6	8.848%
2	41,484	13,981	41	15.3	4.297%
3	23,965	16,709	45	20.2	2.483%
4	30,473	17,685	47	21.5	3.157%
5	83,157	15,798	44	13.2	8.614%
6	4,641	21,550	47	22.2	0.481%
7	129,780	17,041	34	11.9	13.444%
8	3,418	24,755	45	18.3	0.354%
9	43,860	20,351	39	15.2	4.544%
10	2,772	21,617	44	14.8	0.287%
11	51,169	21,529	38	14.7	5.301%
12	8,989	24,882	42	17.8	0.931%
13	1,988	33,537	46	20.9	0.206%
14	226,451	22,736	38	12.5	23.459%
15	70,135	26,190	38	12.3	7.265%
16	72,332	34,632	40	15.0	7.493%
17	58,006	46,637	42	15.2	6.009%
18	21,310	73,252	50	22.8	2.208%
19	4,697	106,909	54	27.4	0.487%
20	1,134	119,072	53	24.3	0.117%
21	149	143,720	55	23.1	0.015%
22	6	170,869	57	30.9	0.001%
<b>Total</b>	<b>965,323</b>	<b>23,697</b>	<b>39</b>	<b>13.5</b>	<b>100%</b>





## ANNEX II

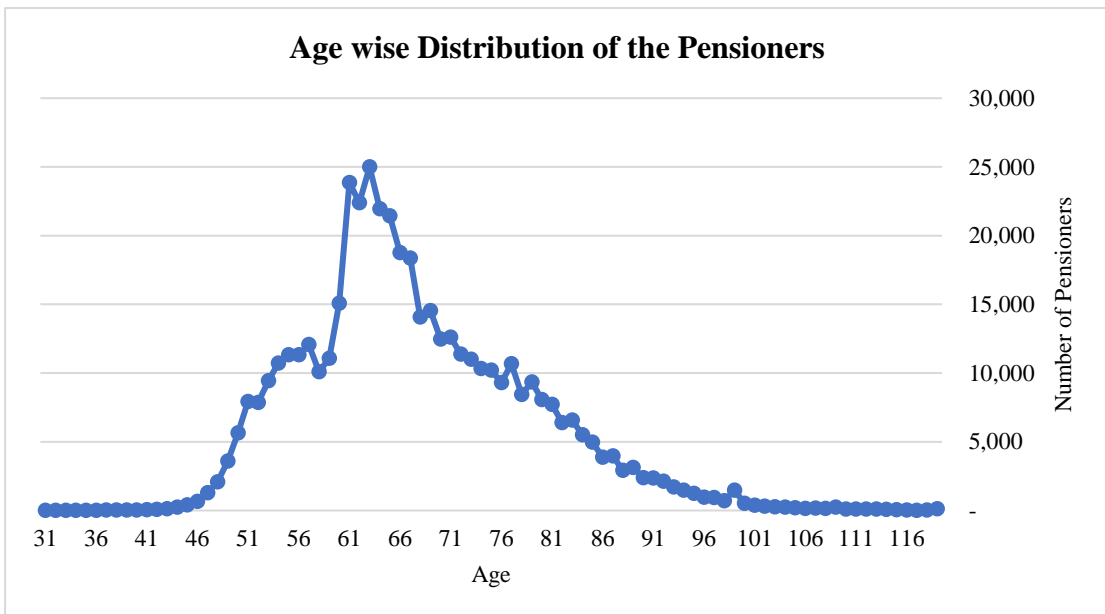
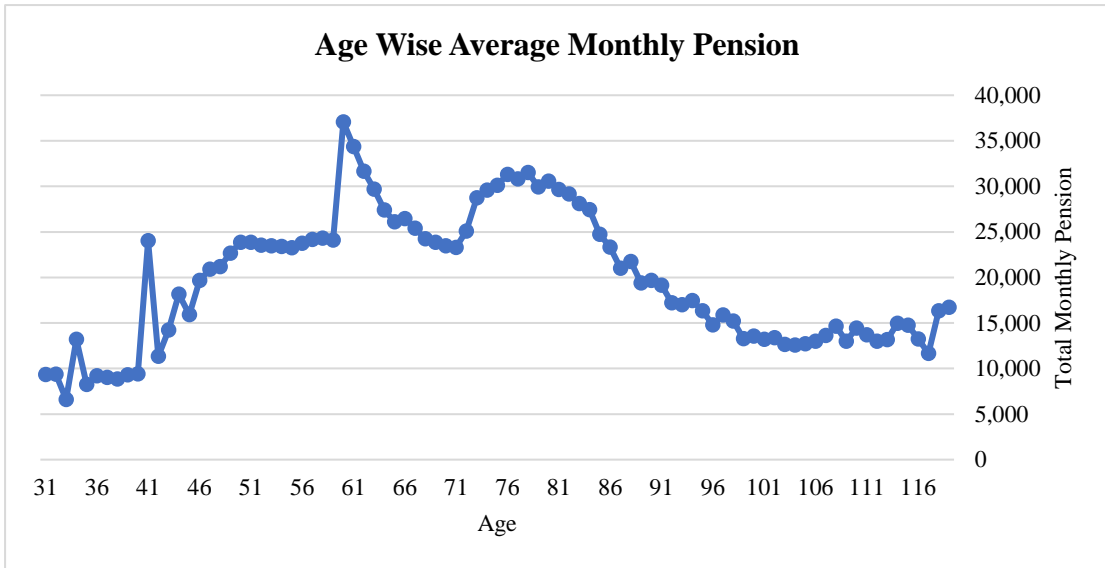
### All Pensioners including Widow/widowers/Children

For each Age, Number, Average Monthly Pension, and Percentage Number at each Age.

Age	Number	Average Monthly Pension	% of Total Number
31	1	9,356	0.000%
32	3	9,391	0.001%
33	4	6,608	0.001%
34	11	13,220	0.002%
35	8	8,241	0.002%
36	12	9,200	0.003%
37	27	9,032	0.006%
38	26	8,856	0.005%
39	37	9,326	0.008%
40	27	9,424	0.006%
41	50	24,034	0.010%
42	82	11,345	0.017%
43	130	14,220	0.027%
44	235	18,155	0.049%
45	392	15,913	0.082%
46	669	19,672	0.140%
47	1,289	20,906	0.269%
48	2,088	21,195	0.436%
49	3,595	22,655	0.750%
50	5,647	23,865	1.178%
51	7,920	23,860	1.652%
52	7,867	23,538	1.641%
53	9,451	23,462	1.972%
54	10,733	23,387	2.239%
55	11,331	23,262	2.364%
56	11,333	23,752	2.365%
57	12,069	24,189	2.518%
58	10,102	24,311	2.108%
59	11,068	24,116	2.309%
60	15,070	37,062	3.144%
61	23,866	34,361	4.980%
62	22,400	31,652	4.674%
63	24,998	29,675	5.216%
64	21,961	27,425	4.582%
65	21,437	26,097	4.473%
66	18,765	26,468	3.915%
67	18,354	25,407	3.830%
68	14,072	24,240	2.936%
69	14,553	23,852	3.036%
70	12,469	23,474	2.602%
71	12,599	23,283	2.629%
72	11,385	25,084	2.375%
73	11,008	28,760	2.297%



Age	Number	Average Monthly Pension	% of Total Number
74	10,325	29,578	2.154%
75	10,220	30,119	2.132%
76	9,295	31,315	1.939%
77	10,668	30,829	2.226%
78	8,445	31,523	1.762%
79	9,346	29,936	1.950%
80	8,063	30,560	1.682%
81	7,706	29,651	1.608%
82	6,394	29,150	1.334%
83	6,576	28,114	1.372%
84	5,498	27,427	1.147%
85	4,973	24,726	1.038%
86	3,865	23,323	0.806%
87	3,973	21,016	0.829%
88	2,926	21,749	0.611%
89	3,137	19,391	0.655%
90	2,391	19,660	0.499%
91	2,357	19,138	0.492%
92	2,119	17,215	0.442%
93	1,702	17,009	0.355%
94	1,483	17,463	0.309%
95	1,253	16,347	0.261%
96	958	14,779	0.200%
97	939	15,877	0.196%
98	706	15,224	0.147%
99	1,481	13,286	0.309%
100	525	13,557	0.110%
101	382	13,223	0.080%
102	315	13,392	0.066%
103	267	12,650	0.056%
104	250	12,582	0.052%
105	191	12,726	0.040%
106	145	12,987	0.030%
107	161	13,632	0.034%
108	140	14,641	0.029%
109	236	12,990	0.049%
110	110	14,437	0.023%
111	101	13,712	0.021%
112	90	13,011	0.019%
113	94	13,167	0.020%
114	74	14,961	0.015%
115	45	14,754	0.009%
116	39	13,259	0.008%
117	16	11,671	0.003%
118	38	16,322	0.008%
119	112	16,729	0.023%
<b>Total</b>	<b>479,274</b>	<b>26,783</b>	<b>100%</b>



**ANNEX III****Mortality Rates**

The following table shows the age-based in-service mortality rates used for the purpose of valuation. The rates are those of the standard SLIC 2001–05 Mortality table used for actuarial work in Pakistan.

Age	Mortality Rates	Age	Mortality Rates
20	0.000958	64	0.02168
21	0.000974	65	0.02305
22	0.000991	66	0.02439
23	0.001011	67	0.02569
24	0.001032	68	0.02751
25	0.001057	69	0.02946
26	0.001084	70	0.03225
27	0.001115	71	0.03533
28	0.001150	72	0.03876
29	0.001190	73	0.04242
30	0.001235	74	0.04638
31	0.001287	75	0.05070
32	0.001345	76	0.05544
33	0.001413	77	0.06065
34	0.001489	78	0.06623
35	0.001577	79	0.07223
36	0.001678	80	0.07871
37	0.001793	81	0.08571
38	0.001924	82	0.09328
39	0.002075	83	0.10139
40	0.002248	84	0.11005
41	0.002445	85	0.11926
42	0.002671	86	0.12904
43	0.002928	87	0.13942
44	0.003221	88	0.15066
45	0.003554	89	0.16261
46	0.003932	90	0.17532
47	0.00436	91	0.18899
48	0.00484	92	0.20397
49	0.00538	93	0.22061
50	0.00599	94	0.23947
51	0.00667	95	0.26084
52	0.00742	96	0.28496
53	0.00824	97	0.31235
54	0.00915	98	0.34366
55	0.01013	99	0.37921
56	0.01120	100	0.41967
57	0.01234		
58	0.01354		
59	0.01481		
60	0.01613		
61	0.01750		
62	0.01888		
63	0.02028		

## Withdrawal, Ill-Health and Early Retirement Rates

The Withdrawal, Ill-Health and Early Retirement rates used in the Actuarial Evaluation are shown in the Table below. These Rates are based on the experience of public-sector Employee Benefit Funds in Pakistan.

Age	Withdrawal Rates	Ill Health Rates	Early Retirement Rates
20	0.10000		
21	0.08570		
22	0.09680		
23	0.06530		
24	0.04400		
25	0.02970		
26	0.04790		
27	0.03110		
28	0.02040		
29	0.01350		
30	0.00900	0.00050	
31	0.00600	0.00055	
32	0.01500	0.00059	
33	0.00940	0.00064	
34	0.00600	0.00069	
35	0.00390	0.00074	
36	0.00260	0.00078	
37	0.00170	0.00083	
38	0.00730	0.00088	
39	0.00450	0.00092	
40	0.00280	0.00097	
41	0.00180	0.00102	
42	0.00120	0.00106	
43	0.00080	0.00111	
44	0.00050	0.00116	
45	0.00040	0.00121	0.01205
46	0.00020	0.00125	0.01440
47	0.00010	0.00130	0.01675
48	0.00010	0.00135	0.01950
49	0.00010	0.00141	0.02145
50	0.00010	0.00147	0.02380
51	0.00010	0.00154	0.02100
52	0.00010	0.00162	0.01900
53	0.00010	0.00171	0.01700
54	0.00010	0.00181	0.01500
55	0.00010	0.00192	0.01300
56	0.00010	0.00204	0.01100
57	0.00010	0.00217	0.00900
58	0.00010	0.00231	0.00700
59	0.00010	0.00246	0.00500
60	-	-	1

## ANNEX IV

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### Summary of the Benefit Structure of Punjab Pension Scheme

All regular employees of the Government of Punjab, who are members of Pension Scheme are entitled to the following benefits on normal and early retirement, death and disability, as at June 30<sup>th</sup> 2019:

#### Normal Retirement Pension at age 60years

If service is less than 5 years:

- Nil Benefit

If service is greater than 5 and less than 10 years:

- A lump sum gratuity is payable. The rate of gratuity is calculated as per the following formula:

*Gratuity = Last Drawn Pensionable Pay x Pensionable Service*

If service is 10 years or greater:

- The rate of pension at normal retirement age is  $(7/300)$  2.33% of the last drawn pensionable Pay for each year of service subject to a maximum service period of 30 years. The maximum pension amount is thus limited to 70% of the last drawn pensionable Pay

The employees can surrender up to a maximum of 35% of the gross pension in lieu of a lumpsum-commuted value. The commuted value at age 60 shall be calculated as per the following formula:

*Commuted Value = 12.37 x amount of pension surrendered x 12*

#### Early Retirement Pension after 25years of service

Early retirement Pension is being paid on retirement after completion of 25 years of service, irrespective of the age of the retiree. The rate of pension at early retirement age is 2.33% of the last drawn pensionable Pay for each year of service subject to a maximum service period of 30 years. The maximum pension amount is thus limited to 70% of the last drawn pensionable Pay

The employees can surrender up to a maximum of 35% of the gross pension in lieu of a lumpsum-commuted value. The age-based commutation factors are set out in the table (later in the section).

For the base calculations, the Early Retirement is after 25years of service without any condition of the age being 55years, as are the existing conditions. We have also made calculations with the condition of retirement age of at least 55years to show the reduction in Liability and Contribution rate. This is Reforms Option 1.

**Death in Service (Please also see Note below)**If service is less than 5 years:

- Nil Benefit

If service is greater than 5 and less than 10 years:

- A lump sum gratuity is payable. The rate of gratuity is calculated as per the following formula:

Gratuity = 1.5 x Last Drawn Pensionable Pay x Service

If service is greater than 10 years or more-Pension to the Widow/widower/children

- The basic pension shall be 2.33% of the last drawn pensionable Pay for each year of service subject to a maximum service period of 30 years

Widow/widower's Pension=75% x basic pension

Widow/widower's pension is paid to eligible children in case of death of the widow/widower. Eligible children are defined as legal male child under the age of 21 years and legal unmarried daughter

In addition to the above, the Widow/widower is entitled to 25% of the commuted value of gross pension. The age-based commutation factors are set out in the table (later in the section)

**Note:** According to the Notification Number **No.FD-SR-I/3-10/2004** Dated August 15<sup>th</sup> 2017 issued by the Government of Punjab, with effect from 22<sup>nd</sup> February 2017, the deceased's family shall be allowed, salary till the date of superannuation of the deceased civil servant. After the date of superannuation Family pension shall be allowed.

For Actuarial Evaluation we have assumed that Family pension shall be payable from age 60 of the deceased employee. We have not made any provision for the salary payable to the family from the date of death till the date of superannuation, of the deceased employee.

**Death after Retirement**

In case of death after retirement, the Widow/widower is entitled to receive 75% of the pension being received by the retiree.

Widow/widower's pension is paid to eligible children in case of death of the widow/widower. Eligible children are defined as legal male child under the age of 21 years and legal unmarried daughter.

**Ill-health Retirement Pension**If service is less than 5 years:

- Nil Benefit

If service is greater than 5 and less than 10 years:

- A lump sum gratuity is payable. The rate of gratuity is calculated as per the following formula:

$$\text{Gratuity} = 1.5 \times \text{Last Drawn Pensionable Pay} \times \text{Service}$$

If service is 10 years or more:

- The basic pension is 2.33% of the last drawn pensionable Pay for each year of service subject to a maximum service period of 30 years.

The employee can surrender up to a maximum of 35% of the gross pension in lieu of a lumpsum-commuted value.

### **Immediate (Ad hoc) Pension Increase**

According to the notifications issued by the Government of Punjab, with effect from 1<sup>st</sup> July 2019, the Net Pension amount payable for new retirees will increase by 81% after allowing for the previous increases as follows:

Year	Effective Date	Rate of Increase
2011	01.07.2011	15%
2015	01.07.2015	7.50%
2016	01.07.2016	10%
2017	01.07.2017	10%
2018	01.07.2018	10%
2019	01.07.2019	10%

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.

### **Minimum Pension**

Minimum pension payable to a retired employee is Rs.10,000/- per month. Minimum pension payable to a Family pensioner is Rs. 7,500/- per month (i.e. 75% of Rs.10,000).

## Commutation Table

Following is the age – based commutation table showing commutation factors at ages 20 – 60.

Age	Commutation Factors	Age	Commutati on Factors	Age	Commutati on Factors
20	40.5043	36	28.3362	52	17.0050
21	39.7341	37	27.5908	53	16.3710
22	38.9653	38	26.8482	54	15.7517
23	38.1974	39	26.1009	55	15.1478
24	37.4307	40	25.3728	56	14.5602
25	36.6651	41	24.6406	57	13.9888
26	35.9006	42	23.9126	58	13.4340
27	35.1372	43	23.1840	59	12.8953
28	34.3750	44	22.4713	60	12.3719
29	33.6143	45	21.7592		
30	32.8071	46	21.0538		
31	32.0974	47	20.3555		
32	31.3412	48	19.6653		
33	30.5869	49	18.9841		
34	29.8343	50	18.3129		
35	29.0841	51	17.6526		

## Restoration

The retirees shall be entitled to pension restoration of their commuted part with indexation after lapse of the whole number of years of the commutation factor.

## Medical Allowance

All the retirees retiring in Basic Pay Scales (BPS) 16 to BPS-22 and in BPS 1 to BPS 15 are entitled to Medical Allowance at the rate of 20% and 25% respectively of the net monthly pension at the time of retirement. Medical Allowance amount is increased by 25% immediately for new pensioner.



## ANNEX V

### Expected Number of Total Pensioners Each Year

	Base Scenario	Reform Option 1	Reform Option 2	Reform Option 3	Reform Option 4	Reform Option 5	Reform Option 6
Year	Number of Total Pensioners						
<b>2019-20</b>	490,586	490,586	490,586	490,586	490,586	490,586	490,604
<b>2020-21</b>	504,523	501,873	504,523	504,523	504,523	504,523	488,134
<b>2021-22</b>	521,845	516,577	521,845	521,845	521,845	521,845	490,706
<b>2022-23</b>	540,019	531,564	540,019	540,019	540,019	540,019	502,780
<b>2023-24</b>	560,006	546,786	560,006	560,006	560,006	560,006	513,338
<b>2024-25</b>	580,817	562,170	580,817	580,817	580,817	580,817	524,256
<b>2025-26</b>	600,995	577,050	600,995	600,995	600,995	600,995	534,550
<b>2026-27</b>	620,646	591,734	620,646	620,646	620,646	620,646	547,812
<b>2027-28</b>	642,428	608,575	642,428	642,428	642,428	642,428	561,018
<b>2028-29</b>	662,073	623,691	662,073	662,073	662,073	662,073	575,121
<b>2029-30</b>	678,746	636,428	678,746	678,746	678,746	678,746	590,416
<b>2030-31</b>	693,412	647,269	693,412	693,412	693,412	693,412	606,217
<b>2031-32</b>	708,003	657,963	708,003	708,003	708,003	708,003	622,103
<b>2032-33</b>	721,442	667,528	721,442	721,442	721,442	721,442	640,319
<b>2033-34</b>	734,152	676,448	734,152	734,152	734,152	734,152	656,887
<b>2034-35</b>	746,240	685,354	746,240	746,240	746,240	746,240	670,990
<b>2035-36</b>	758,705	694,521	758,705	758,705	758,705	758,705	683,153
<b>2036-37</b>	771,062	703,526	771,062	771,062	771,062	771,062	695,576
<b>2037-38</b>	785,290	714,556	785,290	785,290	785,290	785,290	707,153
<b>2038-39</b>	800,383	726,623	800,383	800,383	800,383	800,383	718,290