ACTUARIAL ASSESSMENT OF PENSION AND GENERAL PROVIDENT FUND LIABILITIES

(AS PER CONTRACT WITH PRMP, GOVERNMENT OF PUNJAB UNDER TA Loan No. 2386 – PAK)

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August 31, 2009

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Table of Contents

Executive Summary

1. The primary objectives of the current assignment given by Punjab Resource Management Programme, Government of Punjab (GoPb) (under TA Loan No. 2386) in the Terms of Reference of contract dated March 9, 2009 are:

   i. Conduct an actuarial valuation of Punjab Government Pension and General Provident Fund Schemes.
   ii. Report on anomalies and inaccuracies of computerized Pension and GP Fund records.
   iii. Carry out financial projections of Punjab Pension Fund and General Provident Fund over future years.
   iv. Make recommendations for funding requirements of Punjab Pension Fund and General Provident Fund, based upon financial projections.

   We have also included reporting and disclosures of Pension and General Provident Fund Schemes as per International Public Sector Accounting Standard (IPSAS) 25.

2. Punjab Government has set up a separate Punjab Pension Fund to pre-finance part of pension liability. As at 30.06.09, the assets of the Pension Fund amount to **Rs. 3 billion**. In addition, the legislation for setting up General Provident Fund has been recently enacted. The Government intends to have Rs.12 billion in Pension Fund by the end of year 2009 - 10.

3. An initial actuarial assessment of GoPb pension liability was conducted in 2006-07. The Government of Punjab intends to update the said assessment and to illustrate financing options for revising the funding strategy.

4. The estimated accrued liability of Punjab Government Pension Scheme as at 30th June 2007 worked out to Rs.425 billion. Out of this, Rs.296 billion pertained to active employees and the remaining Rs.129 billion associated to pensioners.

   However, due to different past service distributions of different districts, the accrued liability ranged between Rs.349 billion to Rs.485 billion.

5. Data for the current exercise was received from two sources, AG Office and Finance Department of GoPb.

6. Information received for estimating pension liability and future cash outflows was as follows:

   AG Office:

   i. 96.536 records of non-contractual active employees of Lahore District in MS Excel.
   ii. 44,477 records of GoPb Pensioners, received in September 2008 (referred to as smaller data set in the Report)
   iii. 225,840 records of GoPb Pensioners, received in May 2009 (referred to as larger data set in the Report)
   iv. Total pension payout for the year 2007-08 and the estimated payout for 2008-09 (split by pension, commutation and gratuity payments)
   v. Information of total number of pensioners for the year 2007-08 and 2008-09.

   Finance Department of GoPb:

   i. Information of total sanctioned posts for 2009.

7. Different checks revealed a number of anomalies in data set of active employees and both smaller and larger pensioners' data sets.

The numbers of records discarded from each data set are as follows:

	Active	Pensioners Smaller Data Set	Pensioners Larger Data Set
Total Discarded Data	**36,767**	**1,883**	**53,658**
Total Original Data	96,536	44,477	225,840
Final Data Used	**59,769**	**42,594**	**172,182**

8. In greater order to develop greater confidence in the data, various salient features of the data were checked for their reasonableness.

9. Pensioner's larger data set requires further analysis and checking. The data can be used with more refinement and confidence level in the next actuarial valuation.

10. It is strongly recommended that the data for active employees and pensioners should be transferred to electronic records in proper manner and various checks should be applied on the data base after feeding the information.

11. From the remaining sample set of 59,769 active employees and 42,594 pensioners from smaller data set, the distributions of active employees and pensioners were derived using aggregate information of sanctioned posts for employees (after making adjustments for actual employees and contractual workers using information received for previous exercises), and aggregate pension payout during 2007-08.

12. **There was adequate confidence in the constructed data in spite of relatively small samples because the valuation base used aggregate information for both active employees and pensioners information i.e. aggregate pension payout of Rs. 11.996 billion for the year 2007-08 and aggregate number of active employees of 831,186 (extracted from information of total sanctioned posts). The individual records of active employees and pensioners were merely used to construct various age, service, salary and pension amount distributions.**

13. **The accrued liability of the Punjab Government Pension Scheme, based on the above information base and assuming NIL early retirements is Rs.597.6 billion as at 30th June 2009.**

    Out of this liability, Rs.391.7 billion pertains to active employees and the remaining Rs.206.0 billion is associated with existing pensioners.

14. The assumption of NIL early retirement was based on the following factors:

    i. the estimated pension and commutation outflows for the year 2007-08 and 2008-09, based on NIL assumption of early retirement, matched with the actual payouts for the same periods,
    ii. the Finance Department highlighted that there have been practically no early retirements in the last couple of years,
    iii. early retirements in previous years had been unusually high on account of the expectation that the Government would soon withdraw commutation benefit, and
    iv. the current recessionary environment would force the number of early retirements downwards.

    Valuation conducted in 2007 used early retirement factors calculated on experience of public sector employee benefit schemes in Pakistan.

    However, if the economic conditions return to normalcy, the early retirement may pick up. Therefore, two sets of valuation results have been provided in the Report, one based on NIL assumption, and the other on 2007 early retirement rates.

15. The accrued liability of the Punjab Government Pension Scheme, assuming early retirements based on historical pattern, is Rs.636.3 billion as at 30th June 2009.

16. A summary of the expected pension out goes related to Pension Scheme over the next 30 years (on nominal and real basis) is:

			Total Expense	
Year	**Expected Pension**	**Expected Commutation**	**Expense on Nominal Basis**	**Expense on Real basis**
2009 - 10	16.4	4.8	21.2	20.0
2019 - 20	54.4	23.1	77.5	34.6
2029 - 30	196.8	67.1	263.8	55.2
2039 - 40	450.5	82.2	532.7	51.8

17. There are no visible jumps in the total expected cash flows in any year (in both nominal and real terms), and the amounts have a smooth progression over time. The commutation payments over the next 30 years do have sudden changes on nominal basis. Commutation payments are one-time expense and this pattern of jumps is mostly due to the distribution of the active employees determined from the data. The pension payout on real basis increases by 6% per annum for the next 17 years and remains virtually static thereafter.

18. Information received for estimating GP Fund liability and future cash outflows was as follows:

GP Fund Balances (Lahore District)

Information of 110,773 records from provincial and district government having details of Net GPF Balances from SAP/R3

GP Fund Advances (Lahore District)

Information of 50,685 records from provincial and district government having details of GPF Advances against GPF balances.

GP Fund Balances and Advances (Other Districts):

Additional information of 145,414 records with GPF Balances and Advances for 8 other districts.

19. Different checks revealed a number of anomalies in data set. The number of records discarded from each data set are as follows:

GP Fund Balances (Lahore District)	3,988
GP Fund Advances (Lahore District)	19,455
GP Fund Balances and Advances (Other Districts)	49,812

20. It was **not** possible to use the provided information for other than Lahore Districts, because the district wise average balances were significantly lower as compared to those provided for Lahore district earlier **(Rs. 86,218)** and were much lower than the expected range of **Rs.75,000 –Rs.85,000. It appeared that the accumulated GPF balances were not updated from the date of start of employment. Thus, to determine the underlying liability of the Government of Punjab GP Fund and cash-flow projections the Lahore district information was used.**

21. It is strongly recommended that the data for GP Fund Balances and Advances should be transferred to electronic records in proper manner and various checks should be applied on the data base after feeding the information.

22. The resulting information was mapped on to the active population to estimate the GP Fund Liability.

23. **Estimate of accrued liability of the Punjab Government General Provident Fund Scheme, based on the above information base is Rs.79.2 billion as at 30th June 2009.**

24. The growth in GP Fund balances (i.e. liability), assuming future interest credited is 12% per annum, for the next 30 years at 5 year intervals on nominal and real basis (using 2009-09 as base year) is given the following table:

Year	Estimated GPF Liability at fiscal year End (Nominal Basis)	Estimated GPF Liability at fiscal year End (Real Basis)
2009 – 10	89.8	77.8
2013 – 14	148.6	96.4
2018 – 19	260.3	117.4
2023 – 24	408.6	128.0
2028 – 29	571.8	124.6
2033 – 34	873.1	131.8
2037 – 38	1305.8	146.3
2039 – 40	1597.5	154.1

Importantly, GoPb is expected to consume approximately Rs. 5.0 billion of employees' money in 2009-10, which is projected to escalate over time.

25. A summary of the expected out goes related to General Provident Scheme over the next 30 years (on nominal and real basis) is:

	Total Expense	
Year	Expense on Nominal Basis	Expense on Real Basis
2009 - 10	4.2	3.9
2019 - 20	17.5	7.7
2029 - 30	56.1	11.6
2039 - 40	87.9	9.7

26. There is a visibly rapid increase in GP Fund payments on nominal basis after which the payments have sudden dip in years 2029-30. Overall, even on real basis, the increase in GP Fund cash outflows is more significant than the increase in pension outgoes.

27. Punjab Government is contemplating various possibilities of capital injections into the Pension and GP Fund from year 2009-10 onwards. It is, however, extremely important to determine adequacy of capital injections versus objectives to be achieved by these contributions. Government can then decide whether it needs to make a change in proposed capital contribution amount and/or objectives of funding.

28. The most appropriate Funding approach in case of a GP Fund is that Government should start making contributions deducted from the salaries of the employees to the General Provident Fund on regular basis and amortize the existing accrued liability over a period of 10, 20 and 30 years. Amortization of the accumulated GP Fund liability of **Rs.89.8 billion** projected at 30.06.2010 for different durations would be as follows:

Amortization Period	Annual Instalment payable at the middle of the Year
10 Years	15.0 billion
20 Years	11.4 billion
30 Years	10.5 billion

29. **The Implicit Pension Debt ratio for Government of Punjab Pension Scheme is estimated to be in range between 11-12%. This is on the lower side when compared with other countries.**

30. In view of existing factors such as revenue crunch, priority for spending in other areas, relatively low Implicit Pension Debt of Punjab Government, and higher priority to fund GP Fund liability, it would be advisable to build the Pension Fund gradually in the first few (5-10) years and treat it as a buffer in case of:

- any unexpected pension outgoes,
- Government revenue shortfall,
- or to fulfil the need of spending in other areas

31. Keeping in view the above parameters and constraints, it would be prudent to start funding of both employee benefit schemes at the same time with higher priority attached to GP Fund with relatively low contributions for financing accrued GP Fund liability and meeting pension expenses in the first few years.

32. An optional funding strategy (which has been discussed in detail with the Finance Department) which incorporates the above criteria is given below:

Year	Annual Regular Contribution deducted from Salaries	Past GP Fund Liability Amortization Instalment	Total Amount of Pension Fund Contribution (Option D)	Total Contribution
2010 - 11	5.6	2.0	2.0	9.6
2011 - 12	6.2	3.0	3.0	12.2
2012 - 13	6.8	3.0	3.0	12.8
2013 - 14	7.5	4.0	4.0	15.5
2014 - 15	8.3	5.0	5.7	19.0
2015 - 16	9.2	6.1	6.3	21.6
2016 - 17	10.1	7.3	6.9	24.3
2017 - 18	11.1	8.5	7.5	27.1
2018 - 19	12.3	9.7	8.2	30.2
2023 - 24	19.3	16.8	12.3	48.4
2028 - 29	28.8	25.5	18.2	72.5
2039 - 40	74.6	69.6	58.2	202.4

33. This funding approach should be reviewed in future for a longer time horizon.

34. The reporting and disclosures of GoPb Pension and GPF Schemes have also been made as per International Public Sector Accounting Standard (IPSAS) 25 for the year 2008-09.

    As per our interpretation, GPF Scheme does not fall under IPSAS 25 because it does not constitute a benefit provided by the Govt. as defined in the Standard. However,

best possible reporting of GPF Scheme has been done according to IPSAS assuming that it is a defined benefit scheme.

35. The Standard has reporting and disclosures of various items (such as present value of defined benefit pension obligations, fair value of Plan assets etc.) which will emerge as powerful tools for the Govt. in understanding the liabilities and assets of the Schemes AND various components of assets and liabilities.

36. The Standard requires calculation of following 2 benchmarks :

    i. Statement of Financial Position; and
    ii. Statement of Financial Performance.

    These act as useful criteria for comparison of assets vs. liabilities AND scheme cost vs. contributions during the accounting period.

37. It is important to differentiate the accrued (or funding) pension liability from IPSAS 25 liability.

    One key difference is that IPSAS 25 spreads non-vested liability (i.e. liability associated with active employees having less than 25 years of service) over the average period to vesting. As such, while the accrued (or funding) liability of Punjab Govt. Pension Scheme is Rs.515.4 billion on 01.07.08, the initial liability as per IPSAS 25 is Rs.355.6 billion on the same date (assuming the Pension Scheme is introduced as at the date of adoption of the Standard).

38. Considering that this is a new concept for the Government, its usefulness will start to emerge gradually over the future years.

Introduction

In 2003, the Government of Punjab (GoPb) formed a working group to study the management of liabilities associated with its existing Pension and General Provident Fund schemes; to advise the reforms that were needed and suggest how they would be implemented.

During the first meeting of the working group held on 5th July 2003, it was decided that, in order to achieve the objectives of the study, it would be necessary to perform a preliminary actuarial valuation to determine the scope and magnitude of the scheme and the associated liability of the Government of Punjab Pension Scheme.

Nauman Associates carried out the above mentioned valuation at the behest of the Provincial Government, the results of which were submitted in report CM/L-1955/03 on 26th September 2003 to the working group. This was followed by a second report CM/L-2465/03 on 11th November 2003 containing the Firm's comments, observations and suggestions regarding the GoPb's Pension Scheme.

The results of the exercise carried out in 2003 were very approximate as they were based on minimal information. As such, it was decided to arrive at a better and up-to-date estimate of the GoPb Pension liability by incorporating greater amount of specific information.

In 2007, the undersigned under Contract A12419, Project RSC – C71322 (PAK) – Punjab Government Pension Scheme provided the results of preliminary actuarial valuation for estimating the extent of Pension liabilities and cash flow projections of the Government of Punjab employees. The Report highlighted in detail the sources of data, the anomalies in the available data, cash flow projections of the Pension Fund, sensitivity testing of key assumptions, and made recommendations for the funding requirement related to the Pension Fund.

Punjab Government, with the Asian Development Bank (ADB), has initiated the second phase of reforms under Punjab Government Efficiency Improvement Program [PGEIP]. PGEIP is the continuation of Punjab Resource Management Program [PRMP]. Under this, the GoPb has created a separate Punjab Pension Fund to pre-finance part of the liabilities. One of the policy actions under PGEIP requires, streamlining the processing of Pension cases through necessary restructuring of the Pension administration and improving Pension & GP Fund record keeping. Government of the Punjab intends to update the earlier work and to illustrate financing options for revising the funding strategy. For this purpose, the Finance Department, engaged the undersigned to assist GoPb in conducting an actuarial assessment of Pension and General Provident Fund liabilities and carrying out various tasks as given in below.

This Report provides the results of actuarial valuation for estimating the value of Pension and General Provident (GP) Fund liabilities, related cash flow projections, funding options and reporting and disclosures of these Schemes under International Public Sector Accounting Standard 25 (IPSAS 25) of the Government of Punjab (GoPb), (as outlined under Pension and GP Fund Reforms component of TA Loan No. 2386 – PAK). The tasks have been conducted using the information available from the GoPb's Finance Department and Accounting General's Office.

The Report highlights in detail the sources of data and the anomalies in the available data. The Report also examines different funding options for the Government of Punjab Pension Fund and General Provident Fund.

The Report is split into the following four chapters:

i. Government of Punjab Pension Scheme
ii. Government of Punjab General Provident Fund Scheme
iii. Funding Options
iv. International Public Sector Accounting Standard 25 for Punjab Government Pension & General Provident Fund Schemes

MAIN REPORT

CHAPTER 1
Government of Punjab Pension Scheme

1.1 Introduction

Government of Punjab Pension Scheme is a defined benefit scheme, where the final pension benefit is calculated on last drawn salary and service rendered by the Punjab Government Employees.

This chapter gives details on the accrued liability of Government of Punjab Pension Scheme and the expected future cash-outflows for this scheme. Details of the sources of data, data analysis and suggestive measures to remove anomalies are also part of this chapter.

1.2 Data

1.2.1 Data Sources

Data / information for estimating the accrued pension liability and future cash outflows was provided by the Accountant General (AG) Office and the Finance Department of Government of Punjab. The following are the details of the data / information obtained from each of the sources:

Accountant General (AG) Office

Active Employees

The AG Office provided data for active employees of Lahore District only. The information was made available for 96,536 non-contractual active employees in MS Excel. Each entry of an employee contained fields including:

i. name of employee,
ii. date of birth, date of appointment,
iii. salary,
iv. grade; and
v. other relevant information.

Pensioners

The AG Office provided two data sets for pensioners at different points of time. The first data set was provided in the month of September, 2008 containing information of 44,477 GoPb's pensioners. The second, much larger data set, was provided in the month of May, 2009 containing information of 225, 840 GoPb's pensioners.

The information provided in both data sets was quite similar in terms of the fields for each pensioner. These fields included:

i. date of birth,
ii. date of appointment,
iii. date of death etc.

However, the amount of information provided for pensioners' category of each pensioner was different in the two data sets. The first (smaller) data set provided greater detail of

pensioner's category and included information whether the pensioner was a normal retiree, invalid retiree, early retiree or the family was the beneficiary in case of death in service or after retirement. The second (larger) data set only provided information whether the pension category was surviving or family.

It should be noted that the pension amounts given in both data sets were those as calculated at the time of retirement of the pensioner or the death of the employee, rather than the current pension payments (as per the indexation increases announced by GoPb from time to time). To estimate the accrued pension liability and future cash out flows, the monthly pension of a pensioner as at the date of valuation is required. For this purpose, an indexation table was used to calculate factors to determine the pension amount being received by the pensioner as at 30.06.09. The table was developed using the information from previous indexations announced by GoPb and is provided in Appendix III of the Report.

Information of total number of pensioners for the year 2007-08 and 2008-09 were provided. Details are as follows:

	Total Number of Pensioners
2007-08	381,389
2008-09	360,822

Pension Payout

The following information was provided by AG Office for total pension payout for the year 2007-08 and the estimated payout for 2008-09 (split by pension, commutation and gratuity payments) for actuarial valuation of Pension Scheme:

(Rs. Billion)

Description	2007-08 (Actual Expenditure)	2008-09 (Projected Figures)
Pension	11.996	13.195
Commutation	3.430	3.773
Gratuity	0.417	0.459
Medical Reimbursement Charges	0.563	0.619
TOTAL	16.407	18.048

Finance Department (FD) of Government of Punjab

The FD of GoPb provided information of the total sanctioned posts for each Grade (1 to 22) as at 30.06.2008 and 30.06.2009. Total sanctioned posts for 2009 are 1,029,646.

1.2.2 Data Analysis

Data provided by the AG office was analysed for its reasonableness to qualify its appropriateness for the exercise, and to develop confidence in the valuation results. This section provides a commentary on the reasonableness checks adopted, the anomalies found in the data, and summarises the number of records discarded for each anomaly identified in all data sources.

It should be noted that most of the anomalies found in any data occur at the time when the data is being fed into a system. The data feeder can make a number of errors including but not limited to:

- missing data entries,
- incorrect feeding of entries,
- feeding entries in a format not readable by system,
- typographical errors, and
- repetition of same entries etc.

Anomalies found in active and pensioner's data are as follows:

Anomalies in Active Employees Data

A number of anomalies were found in the data for active employees highlighted below. A table at the end summarizes the number of records removed for each anomaly identified. It should be noted that it was deemed more appropriate to delete an incorrect record rather than making an adjustment to the data, since a wrong adjustment would distort the characteristics of active employee's population, and thus the accrued liability and cash flow projections.

Incorrect Date of Appointment and/or Birth: A few entries were found where the dates of appointment and/or birth were in a format that could not be recognized by the system or could not be understood. These entries were discarded since they could not be used for any calculations.

Age at Appointment is less than 18 and greater than 45: Age of employees at the time of appointment was calculated from the information provided in the data. Records with age at appointment less than 18 and greater than 45 were discarded, since individuals are highly unlikely to be hired at such ages.

Dummy Entries: A fairly large number of records were found with the same date of birth and/or date of appointment. These date of births and/or appointments were distributed equally between all basic pay scales but showed inconsistencies with other fields of the same record. These entries, referred to as "dummy entries", were deleted for the purpose of this exercise. Such dummy entries may exist when the data feeder may not be able to read certain pieces of information from the hard copy, and decides to enter one value for the information he/she is unable to read clearly. As mentioned earlier, such entries would give a distorted picture of the population characteristics.

Duplicate/ Triplicate Entries: A number of records were found to be identical and some recorded twice or thrice. Thus for duplicate entries, one of the two records were discarded and for triplicate entries, two of the three records were discarded.

Age is greater than 60 years: GoPb has a normal retirement age (NRA) of 60 years. Therefore, records with age greater than 60 were discarded on the assumption that the date of birth of these records was incorrect.

Other Anomalies: Some other checks to validate a record were performed, such as date of appointment should be less than date of retirement, basic pay should be at least Rs. 2,475 since minimum basic pay of grade 1 employees is Rs. 2,475 where salary increases take place with change of a grade. Entries that failed to pass these checks were qualified as incorrect and discarded.

The following table provides a summary of each type of anomaly and the number of records discarded:

Type of Anomaly	No. of Records
Age at Appointment was less than **15**	115
Date of appointment was Incorrect	122
Basic Pay was missing	158
Date of Appointment was missing	245
Date of Birth was dummy **(01/08/1984)**	247
Age was more than **60** years	272
Date of Appointment was equal to Date of Retirement	276
Age at Appointment was more than **45** years	500
Duplicate/Triplicate Records	528
Both Date of Birth and Date of Appointment was dummy **(01/08/1984 & 01/01/2003)**	6,295
Basic Pay was less than **2,500** whereas lowest pay in **grade 1** is **2,475**	9,335
Date of Appointment was dummy **(01/01/2003)**	18,674
Total Discarded Data	**36,767**
Total Original Data	96,536
Final Data Used	**59,769**

Anomalies in Pensioners Data

A number of anomalies were found in the both smaller and larger data sets for pensioners highlighted below. A table at the end summarizes the number of records removed for each anomaly identified. It should be noted that it was deemed more appropriate to delete an incorrect record rather than making an adjustment to the data, since a wrong adjustment would distort the characteristics of pensioners' population, and thus the accrued liability and cash flow projections.

Missing & Incorrect entries: Records with important missing or incorrect fields such as:

- date of birth,
- pension at the time of retirement etc.

were deleted.

Incorrect Beneficiary: A check was performed on records to see if the pensioner status matched with the beneficiary type. There were a number of entries that showed pensioner as the beneficiary where date of death and status as dead were provided. There was lack of confidence in such entries and hence were deleted.

Incorrect Date of Appointment, Date of Retirement, Date of Birth or Date of Death:
Total service at the time of retirement of each retiree was calculated from the information available. Records with a total service at the time of retirement being less than 10 years were discarded. As per the rules of the pension scheme, an active employee has to complete a minimum of 10 years of service to qualify for a pension benefit.

On further analysis, some records had a highly unlikely age of less than 20 or greater than 108. Therefore, a minimum benchmark for each pensioner's age was determined according to the category of the pensioner (for instance, for family pensioners, a lower

benchmark was set because it was unclear from the data if the date of birth pertains to the pensioner or beneficiary). Any record not falling in the above set range was discarded.

Also, some records showed a pensioner as a "Normal Retiree" while the status was "Dead". A check was carried out to see if the death took place after retirement since for a case of death during service, the pensioner should fall into the category of "Family Retiree". A few records were found to have this anomaly, and since no appropriate adjustment could be made, these records were discarded.

The following table provides a summary of each type of anomaly and the number of records discarded:

Pensioners Smaller Data Set

Type of Anomaly	No. of Records
Incorrect Date at Death	6
Date of Retirement / Date of Death was missing	25
Date or Retirement earlier than Date of Appointment	38
Date of Death earlier than Date of Retirement	42
Pension Type and Pensioners Status did not match	68
Status is Alive but Date of Death is given	86
Service at Date of Retirement/Death was less than 10 years	99
Net Pension was missing	136
Incorrect Date of Birth or Date of Retirement or Date of Death	354
Date of Birth was missing	1,029
Total Discarded Data	**1,883**
Total Original Data	44,477
Final Data Used	**42,594**

Note: There were 5,380 Records in which date of appointment was missing. However, we included this information in the valuation data because there is no impact of this missing data on liability and cash flow calculations.

Pensioners Larger Data Set

Type of Anomaly	No. of Records
Discarded due to complex/Invalid column Format of Rahim Yar Khan	11,312
No Names and/or Dates/amounts were missing (core info was missing)	414
Date of Birth was missing or wrong	11,054
Net Pension was missing (most of records have gross pension) or wrong amount given	2,412
Age less than 20 years	613
Date of Retirement/Date of Death was missing OR WRONG Date Entered	6,593
Date or Retirement earlier than Date of Appointment	8,770
Date of Death earlier than Date of Retirement	1,033
Pension Type and Pensioners Status did not match	8,756
Date of Birth equal to Date of Retirement OR Date of Death	57
Pension Type is SELF and status is Alive but Age is Less than 45 Years	2,399
Other Error in Data like double dates , DOR etc.	158
Others DOA more than DOD or DOR or text Date Format	87
Total Discarded Data	**53,658**
Total Original Data	225,840
Final Data Used	**172,182**

1.2.3 Suggestions for the Improvement in Employees and Pensioners Database

Keeping in view the above anomalies in the active employees and pensioners database, we suggest that:

1. A proper networking and communication should exist among various districts of Punjab Government and expert/professional employees should be hired for streamlining the employees' and pensioners' record keeping.

2. Transfers of active employees should be recorded properly and care should be taken not to create repetitive records of the same employee. This can be done by tracking the employee through its unique employee number.

3. Date of birth, date of appointment, pay scale, pension nominee, salary history and other relevant information of each employee should be cross checked through employee's original appointment record and the information fed in the system should be verified by the employee.

4. Dummy entries should be avoided since they may cause significant problems for both employees and Government in the long-run,

5. Information of the latest pension amounts being paid to pensioners should be recoded in a proper manner.

6. Date of birth, date of retirement, type of retirement, type of beneficiary, current monthly pension amount and other relevant information should be obtained from their corresponding districts and pension disbursement offices.

7. Verification of the survival of the pension recipient should be streamlined, since this will ensure hedging against the misuse of Pension benefit.

8. Various data checks should be applied on the database after feeding in the information to detect various errors and anomalies. The examples of such checks could be as follows:

Active Employees:

- Age of an employee should not be greater than 60 years
- Age of an employee should not be less than 18 years
- Date of Birth should be earlier than Date of Appointment
- Salary of an employee should not be less than the minimum salary for his/her relevant Pay Scale
- Salary of an employee should not be significantly high

Pensioners:

- Date of Birth, Date of Appointment should be earlier than Date of Retirement/Death
- Retirement before 45 years of age should be verified
- Commutation amount calculated should verified from the gross/net monthly pension amount
- Type of Pensioner should be consistent with his/her age at retirement (for instance early retirement age should be less than 60)

1.2.4 Data Summary

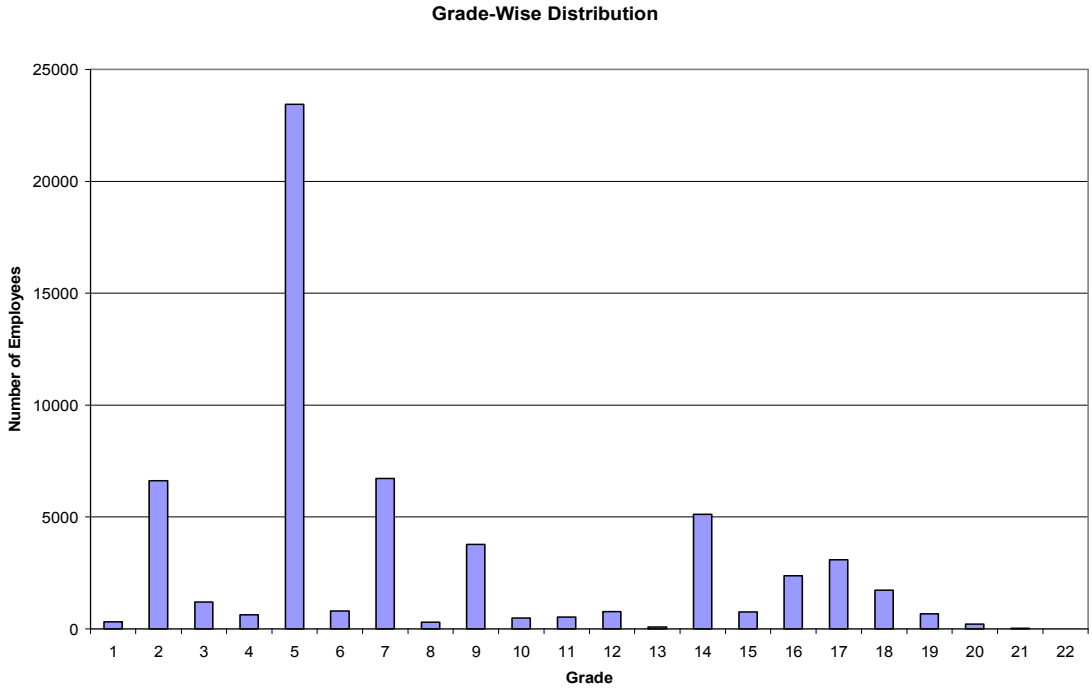
This section provides summary statistics of active employees' and pensioners' data after removal of anomalies as described in the earlier section. It also provides commentary on any visible trends found in the remaining data and compares the smaller and the larger data set for pensioners

Active Employees

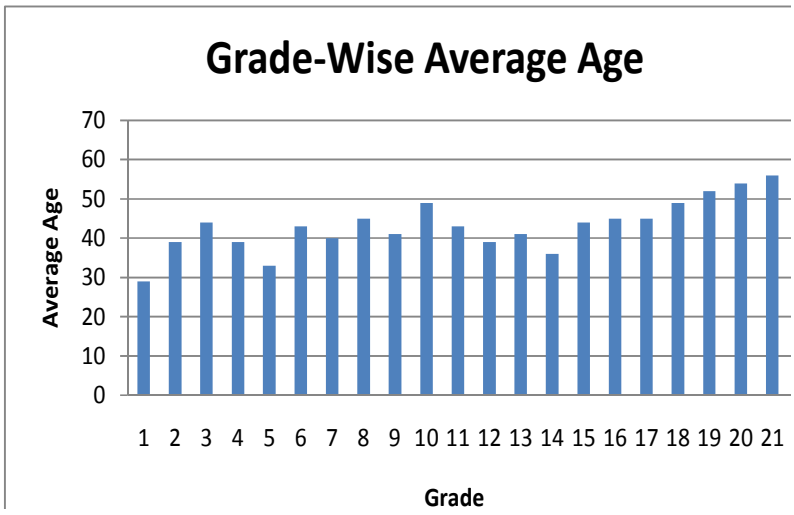
The following table provides summary of the cleaned data of active employees (i.e. data used for valuation and cash flow projections):

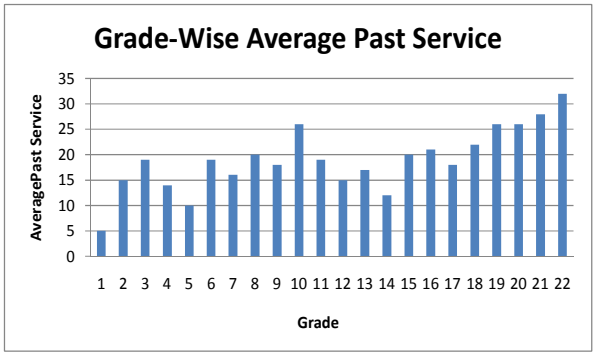
Grade	Number	Average Basic Pay	Average Age	Average Past Service
1	318	3,264	29	5
2	6,622	4,535	39	15
3	1,204	5,325	44	19
4	637	5,141	39	14
5	23,444	5,081	33	10
6	808	6,746	43	19
7	6,722	6,760	40	16
8	307	7,885	45	20
9	3,780	7,809	41	18
10	490	10,018	49	26
11	534	8,770	43	19
12	779	8,690	39	15
13	88	9,455	41	17
14	5,129	8,431	36	12
15	761	12,520	44	20
16	2,383	13,360	45	21
17	3,100	19,194	45	18
18	1,733	26,360	49	22
19	673	32,862	52	26
20	218	38,527	54	26
21	36	46,482	56	28
22	3	54,147	60	32
Total	**59,769**	**8,065**	**38**	**14**

The following graph summarizes the grade-wise distribution of employees:



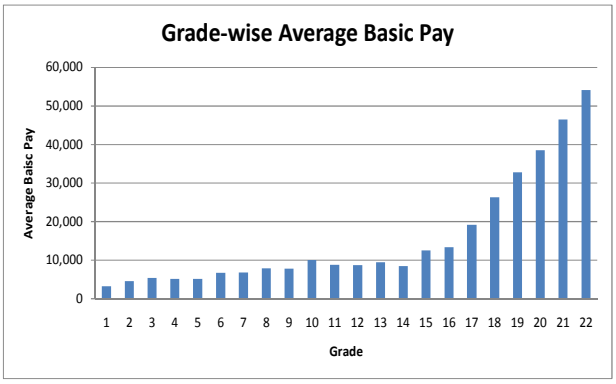
Grade-wise average age and average past service are provided in graphs below:





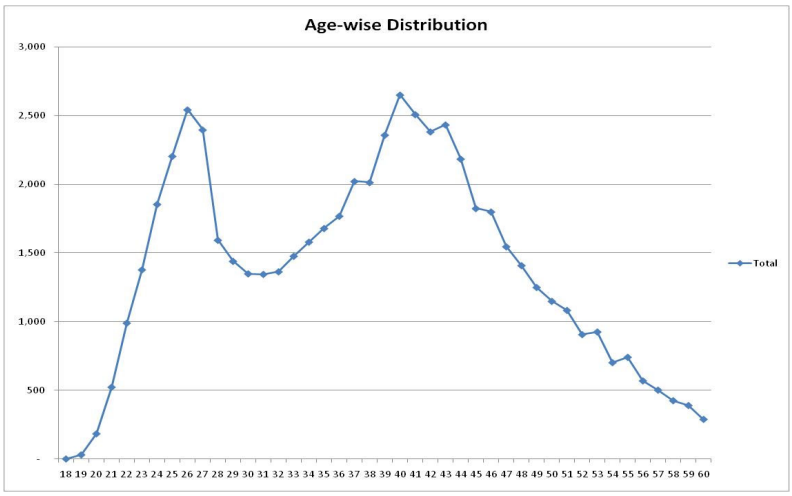
The grade-wise average age does not show any unusual trends. The trend of grade-wise average past service cannot be qualified as being unusual or laying out an incorrect picture since the Government of Punjab does not necessarily promote individuals to a higher grade based upon past service. No other unusual patterns were observed when data of active employees was analyzed grade-wise.

Grade-wise average basic pay is provided in the graph below:

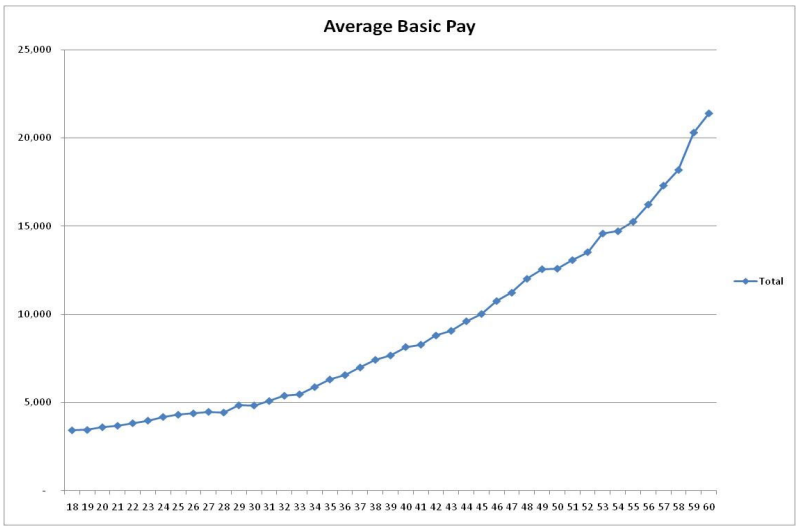


The average salary increases with the grade of the employee which is a very much expected pattern.

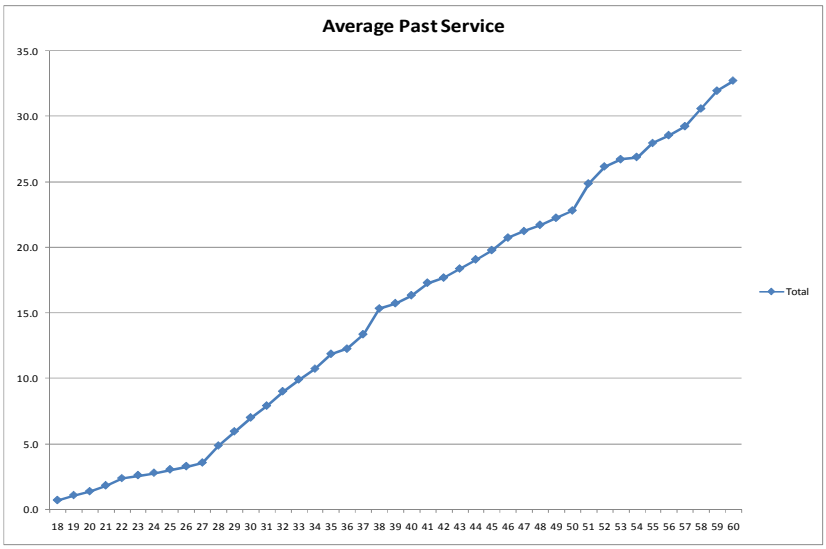
Furthermore, to check if any outliers existed or if there were any unusual patterns a similar analysis was conducted for age-wise distribution of active employees. Age-wise patterns of total number of employees, average basic pay and average past service are provided in graphs below:



The dip in the age-wise distribution from age 25 to 40 is merely due to the hiring pattern.



Average basic pay is expected to increase with age and it can be clearly seen from the graph above that the same trend is observed in data under discussion.



In the same way, average past service of employees is expected to increase with age. As expected, it can be seen above that there is positive correlation between average age and average past service.

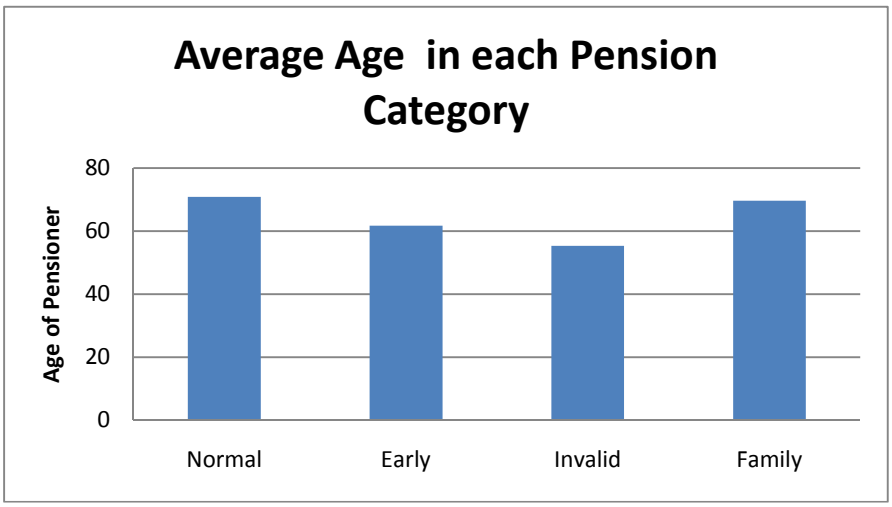
Overall, the patterns seen above do not have any alarming trends indicating any significant issues with the data.

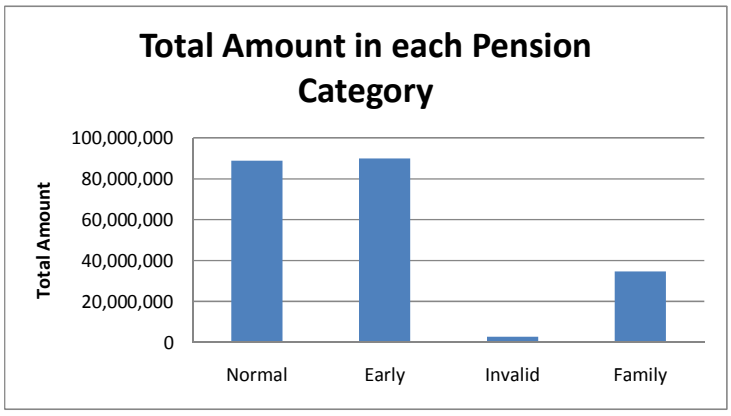
Detailed tables and figures related to these graphs regarding data of active employees is provided in Appendix I.

Pensioners Smaller Data Set

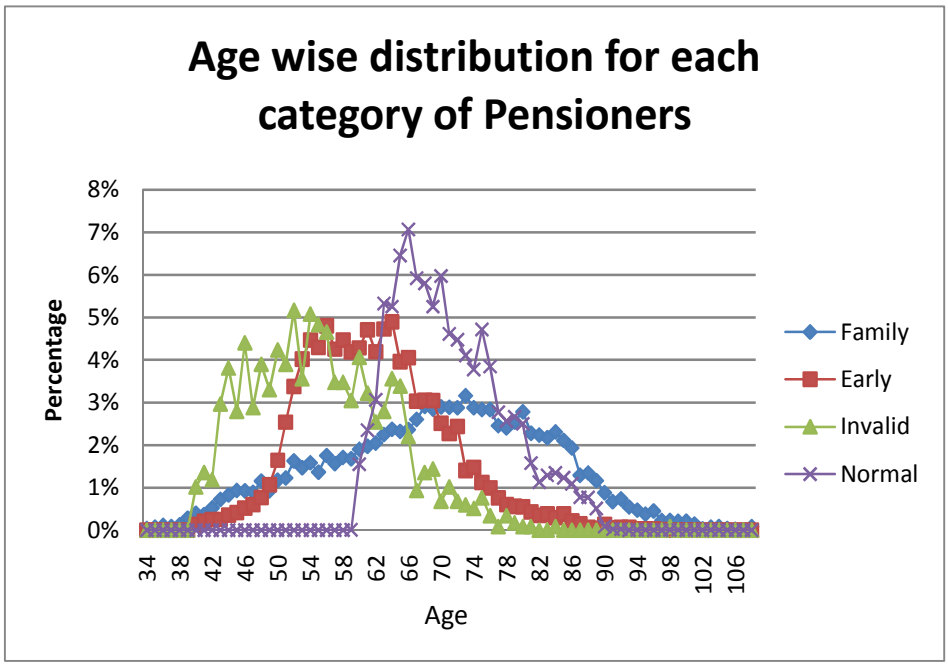
Age wise details for each category (normal, early, invalid and family) of retirees are provided in the Appendix IV. The following tables and graphs shows the summary of the data of Pensioners after removal of anomalies used for the valuation:

Pension Category	Average Age	Total annual pension (Rs.)
Normal	70.9	88,871,734
Early	61.8	89,979,711
Invalid	55.3	2,833,277
Family	69.6	34,713,522
Total		**216,398,244**



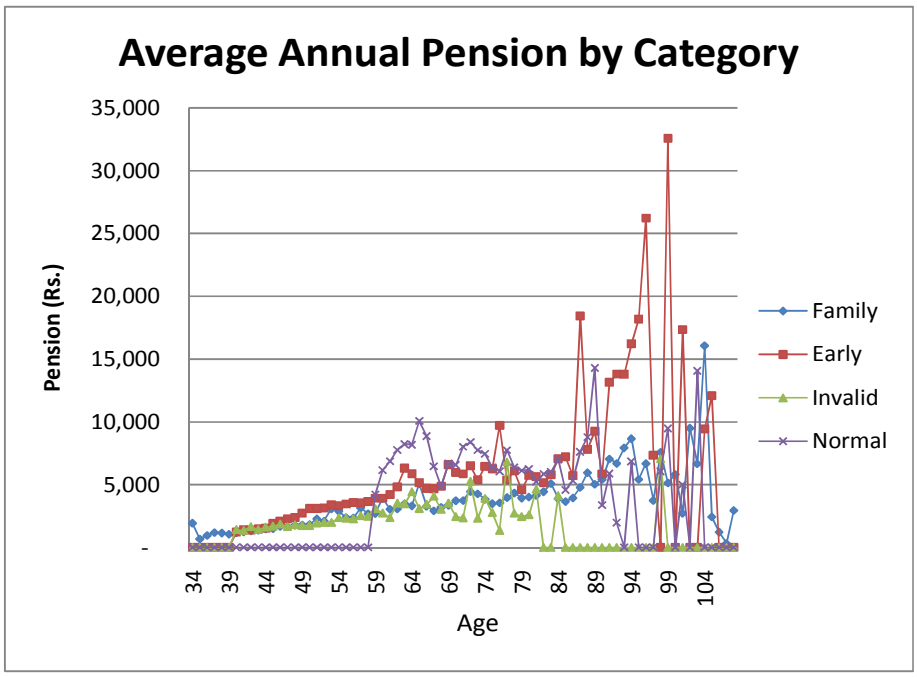


Age-wise comparisons of each category for distribution and average annual pension are provided in the graphs below:



As expected, distribution of family pensioners has the longest tail because of two main reasons. One, that family begins to receive pension after the employee has received pension for several years. Secondly, because most of the workforce of Punjab Government comprises of males and family pensioners are mostly females and females have a longer life expectancy than males.

Invalid pensioners become eligible for invalid pension during service; their distribution is concentrated more at lower ages in comparison to other categories and has the shortest tail because of having low life expectancy. Nothing unusual can be observed from the above graph.



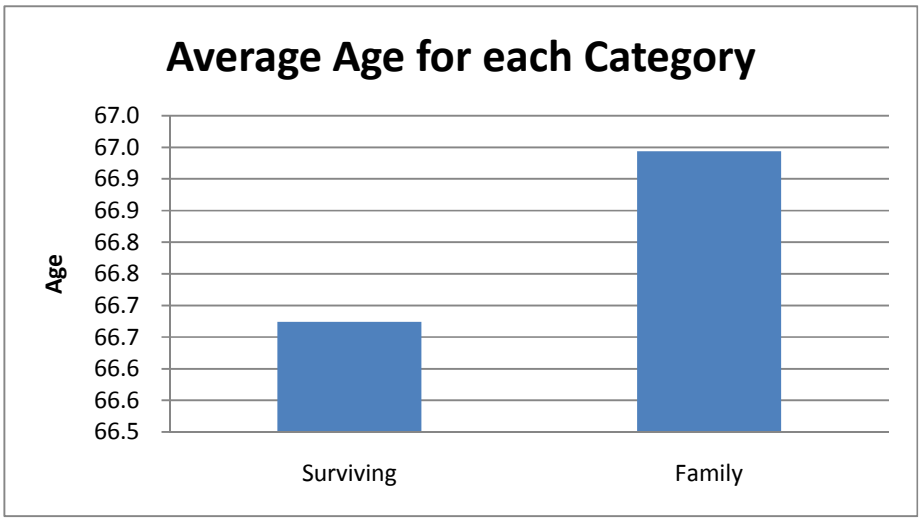
Early retirees generally have a higher average annual pension as expected. This is because individuals with higher salaries are expected to retire early since financial impact on them after retirement is generally much less in comparison to others.

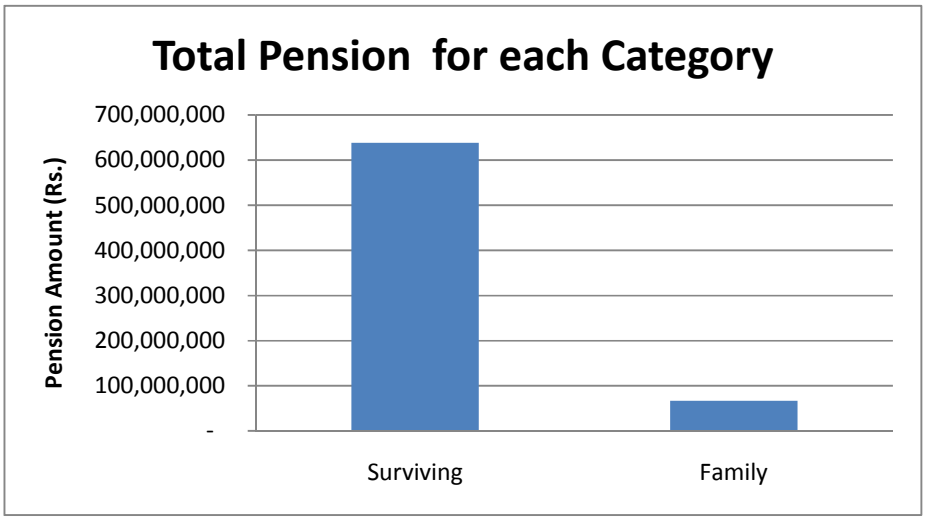
Also, as expected invalid and family pensioners have average annual pensions lower than normal retirees.

Pensioners Larger Data Set

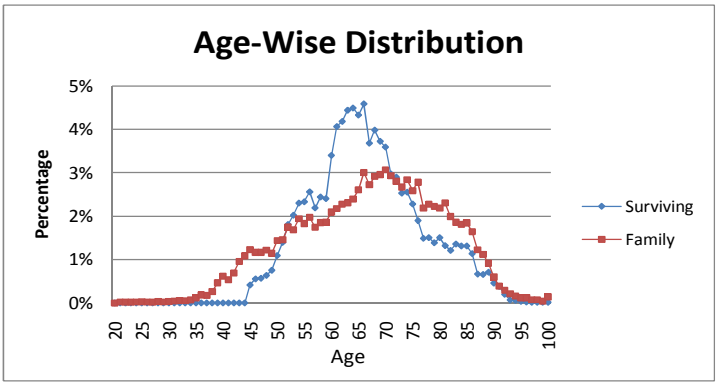
Age wise details for each category (surviving and family) of retirees are provided in the Appendix IV. The following tables and graphs show the summary of the data after removing anomalies:

Type of Retiree	Average Age	Total annual pension (after indexation) (Rs.)
Surviving	66.7	638,076,418
Family	66.9	66,491,869

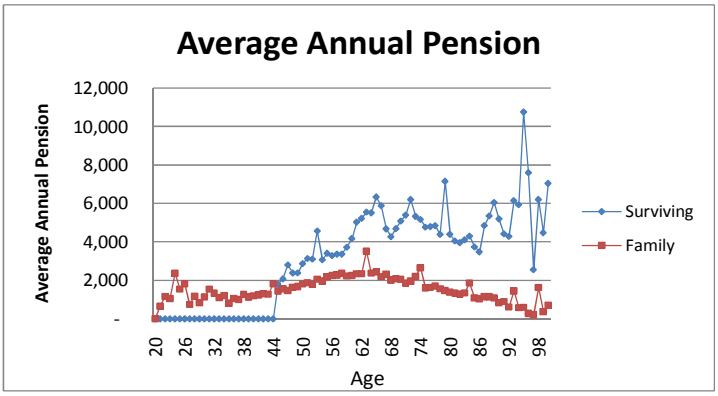




Age-wise comparisons of surviving and family pensioner for distribution and average annual pension are provided in the graphs below:



It can be seen from the graph above that family pensioners distribution is more tilted towards the right hand side because of similar reasons explained for smaller pensioners data. Nothing unusual can be observed from the distributions above.



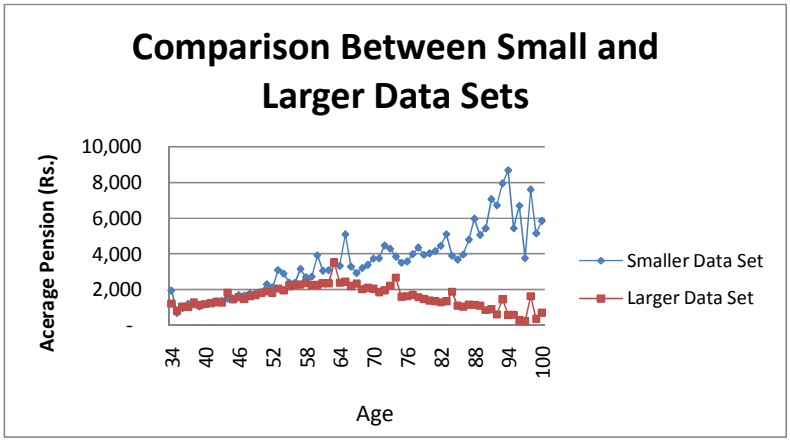
As explained earlier, family pensioners are expected to receive less pension on average the trends that we observe in the graph above are not unexpected.

Comparison of Smaller and Larger Pensioners Data

Since two sets of pensioner's data were provided, a decision had to be made with regards to which data set should be used. The following parameters were compared between the two data sets:

Average annual pension after indexation by age for surviving and family pensioners
Age distribution of family and surviving pensioners

Various discrepancies were found in the comparison of two data sets. For instance the difference in average monthly Pension in the two data sets can be gauged from the following graph:



The pattern of average pension payout is as per expectation for the smaller data set. **However, it is difficult to justify the constant decline in average pension after age 65. As such, the smaller data set was considered more credible and was used in the valuation.**

The larger pensioners' data set requires further analysis and checking. Therefore, it was considered more appropriate to use smaller pensioners' data set for this valuation. The larger pensioners' data can be used with more refinement and confidence level in the next actuarial valuation.

Although sufficient detailed data for pensioners was received, the information used for active employees was only approx. 7% of the total. (after discarding erroneous data).

However, we have sufficient confidence in the results based on existing data as we used aggregate information as a base, such as aggregate pension payout of Rs. 11.996 billion for the year 2007-08 and aggregate number of active employees of 831,186 (extracted from information of total sanctioned posts). The sample data was merely used to construct different distributions.

1.3 Valuation & Cash-flow Projection Assumptions

Actuarial Assumptions are an enterprise's best estimates of the variables that will determine the cost of providing post-employment benefits. Actuarial Assumptions generally comprise of financial assumptions and demographic assumptions.

Financial assumptions about future economic variables have an effect on the real value of money. The key components, for an actuarial valuation conducted to determine the financial implication to fund a Pension scheme, are:

- Net Rate of Return on the Fund
- Expected Increase in Eligible Salary
- Expected Increase in Pension
- Expenses of Management of Pension Scheme/Fund

Demographic assumptions about future characteristics of current and former employees (and their dependants) those are eligible for benefits. The key components of demographic assumptions are:

- Mortality assumptions
- Employee turnover, disability and early retirement assumptions

For the purposes of the actuarial valuation of Punjab Government pension Scheme, the following assumptions have been used:

i. Net Rate of Return on the Pension Fund

The assets of a Pension Fund are invested in secure instruments to ensure future benefit payments when they fall due. The instruments, available for the investment of employee benefit funds as at the valuation date, were generally yielding 9% – 13% per annum.

Taking into account the volatility of economic environment prevailing as at June 30, 2009, it had been assumed that the average long term net rate of return on the proposed Fund (inclusive of both the invested and the un-invested portions) will be 12% per annum (compounded).

ii. Expected Increase in Eligible (Pensionable) Salary

An estimate of future salary increases takes account of inflation, seniority, promotion and other relevant factors, such as supply and demand in the

employment market. It had been assumed that salaries would increase at 11% per annum in future.

The net rate of return on the Fund and the rate of increase in the Eligible Salary are usually inter-related since during periods of inflation, both tend to rise in conformity with each other. From an actuarial costing point of view, it is the difference between these two rates that matters, and not their individual values in isolation.

Thus a difference of 1% between the long-term rate of return on the proposed Fund assets (i.e. 12%) and the long-term rate of increase in Eligible Salary (i.e. 11%) had been considered appropriate. Such an assumption was within the internationally and locally recognised norms.

iii. Pension Indexation

The indexation of pension has been assumed as the rate of 8% per annum. This was based upon past history of indexation provided by the government from time to time and future expectations based upon increased inflation expectation.

iv. Rate of Inflation

Future long-term Rate of Inflation has been assumed at 8% per annum.

v. Expenses of Management

It had been assumed that the expenses for management of Pension Scheme/Fund would be borne by Punjab Government, and the valuation accordingly did not make any provision for them.

vi. Expected Mortality Experience

It had been assumed that the mortality of the employees in active service and pensioners will be according to LIC 96-98a Mortality Table.

vii. Expected rates of Withdrawal/Ill-health/Retirement

The Employee Turnover, Disability and Early Retirement Rates are based on the experience of public-sector employee benefit schemes in Pakistan. (as given in Appendix V of the Report). These rates were used in the valuation conducted in year 2007.

For the current valuation, the Early Retirement Rates have been assumed as NIL, while Employee Turnover and Disability have not been changed. The rationale behind using NIL assumption is as follows:

a. The estimated pension and commutation outflows for the years 2007-08 and 2008-09, based on NIL assumption matches with the actual payouts for the same period. The figures are overestimated if the NIL assumption is withdrawn.
b. The Finance Department highlighted that there have been practically no early retirements in the last couple of years.
c. Early Retirements in earlier years had been unusually higher on account of the expectation that the Government would soon withdraw commutation benefit.
d. The current recessionary environment will force the number of Early Retirements downwards.

However, if the economic conditions return to normalcy, the early retirements may pick up again and the early retirement rates used in 2007 valuation would become more valid. Therefore, two set of results have been provided for the valuation of accrued liability, based on NIL early retirement rates and 2007 early retirement rates.

viii. Nature of Group

Cash-flow projections have been conducted based upon an open group.

Total population of active employees has been assumed to increase by 1% every year. This assumption is based on the factor that the human resource requirements of Punjab Government would remain the same. Consequently the employee strength of the Government would remain in the existing range or increase at a nominal rate in future.

New entrants are assumed to enter the workforce uniformly every year, at ages 21 to 30.

Total number of new entrants are determined using the following formula:
"1%(Total population of active employees at the beginning of the year) + (total number of decrements)"*

ix. Benefit Structure

It has been assumed that the current benefit structure will not change for the period for which the cash-flow projections have been made.

1.4 Actuarial Valuation Method

The basic purpose of an Actuarial Valuation is to project the likely level of the emerging liabilities under a Pension Scheme and to recommend a plan for contributions that will enable the Pension Fund to accumulate sufficient assets for meeting these liabilities. The solvency level of a Pension Fund is generally monitored on a regular basis, particularly if the economic parameters controlling the financial health of the Fund change over time.

The liabilities of a Pension Scheme are long term, consequently the funds required to meet these liabilities can be accumulated over a longer period. In assessing the adequacy of the contribution rate, it is necessary to make projections to determine the levels of the liabilities and the accumulating assets.

To assess the expected liabilities of the Pension Scheme of Punjab Government, the Projected Unit Credit Method has been used.

Projected Unit Credit Method

The Projected Unit Credit (PUC) method is considered as an appropriate actuarial technique to determine the post-employment benefits (such as pension schemes) for large (open) groups in which employees exist and enter on regular basis. PUC is a mandated actuarial technique under International Public Sector Accounting Standard 25 (IPSAS 25). This method determines the liabilities by projecting service/salaries of the employees and then discounting the relevant costs as at the valuation date. Past service cost is calculated by associating the portion of total liability attributable to the service rendered on a pro-rata basis. The regular annual cost (called normal cost) is the liability attributable to one year determined on similar lines.

In a Pension Fund, the required contribution by the employer is dependent upon the age and service profile of the employees. As the time of ultimate benefit payoff comes closer, these factors increase in proportion to each other.

The funding of a Pension Scheme is divided into Past Service Cost and Future Service Cost. The Past Service Cost can be met either by making one lump sum payment to the Scheme or by amortising them over a certain specified period (a fixed number of years or the future working lifetime of the employees). The Future Service Cost is met by way of contributions, as a percentage of pay, to the Scheme. For new employees becoming members of the Scheme, there is no Past Service Cost, and contribution rate is specified such that it is adequate to finance the future benefits payable to such employees.

1.5 Methodology Used for Data Preparation

This section explains the methodology used to prepare the data for calculation of the total accrued pension liability and cash flow projections.

For active employees, at every integer age from 20 to 59 (inclusive) total annual salary and average past service were required for the total population.

For pensioners, at every age, total annual pension amounts for each category were required.

The data provided was a sample of the total population of active employees and pensioners. To estimate the total cash flows and accrued liability of the Pension Fund, this data was mapped on to the total population using the following assumptions and methodology:

Active Employees
Total number of sanctioned posts in the Punjab province as provided by the Government of Punjab stands at 1,029,646. However, the exact number of employees actually hired was not available with the Govt. of Punjab. For this purpose, the number of actual employees were estimated from a similar piece of information provided to us for the earlier exercise conducted in 2003 (see attached Appendix II). The ratio of actual employees to sanctioned posts in 2003 was around 0.86:1 and the same ratio was applied on the current sanctioned posts to estimate the actual number of employees as in 2009. This estimate came out to be 885,496.

A further reduction was applied to account for the contract employees (who are not eligible for pension benefits). Contract employees are assumed to form 6% of the total active employees, this comes out to 54,609. The figure of 6% was derived from the information provided by Finance Department for 2007 exercise.

The remaining estimate of 831,186 active employees, with their total annual salary of Rs. 83,662,117,968 was used for the purpose of this Report.

Age-wise distribution of the sample was calculated and assuming that the sample is a true representative of the total population, the same distribution was applied to the above estimate of active population to attain the total number of employees at each age.

Similar exercise was repeated to estimate the past service and average annual salary at each age.

Pensioners

To estimate the pension liability and cash flow projections, the total annual pension payout by age for each category was required. The pension amounts given in sample data were those as calculated at the time of retirement of the pensioner or the death of the employee, rather than the current pension payments (as per the indexation increases announced by GoPb from time to time). An indexation table was used to calculate factors to determine the pension amount being received by the pensioner as at 30.06.09. The table was developed using the information from previous indexations announced by GoPb and is provided in Appendix III of the Report.

After conversion of the pension amounts, the total pension payout for the sample came out to be Rs.216,398,244. As stated earlier, total pension payout in the year 2007-08 was provided as Rs.11.996 billion. Using this pension payout, total payout in the year 2008-09 was estimated. The pension indexation announced by the Government for the year 2008-09 was 20%. This increase announced for 2009-10 is 20% for pensioners retiring before 1999 and 15% retiring after 1999. The effective increase was about 18%-19%.

The ratio of the total pension payout in 2008-09 and the total of the sample data were then calculated. This ratio was then multiplied with the total pension calculated for each age after indexation to calculate the total pension payout for each age.

1.6 Valuation Results

Results – Assuming NIL Early Retirements

The valuation results based on the methodology applied, **NIL** early retirement assumption and other assumptions as stated earlier are as follows:

	Valuation Result (Rs. billion)
Accrued Liability on account of : a) Active Employees b) Pensioners	 391.7 206.0
Total Liability as at 30.06.2009	**597.6**
Required Contribution Rate, as %age of Eligible Salaries, to fund ***Future Accrual*** of Benefits	24.40%

The results reflect that the past service accrued Pension liability of in-service active employees is **Rs.391.7 billion** and the present value of future Pension payments to existing Pensioners works out to **Rs.206.0 billion** as at 30.06.2009. The total accrued liability of Government of Punjab Pension Fund is **Rs.597.6 billion** as at June 30th 2009.

The rate of contribution required to fund only the future accrual of Pension benefits of active employees is **24.4%** of Pensionable Salary. This means that the Pension liability in future (say next year) would increase with interest on the existing accrued liability of **Rs.597.6 billion** and an amount equal to **24.4%** of annual Pensionable Salary.

Results – Assuming Early Retirements based on Historical Pattern:

The valuation results based on the methodology explained, and rates for 2007 early retirement assumption and other parameters as stated earlier are as follows:

	Valuation Result (Rs. billion)
Accrued Liability on account of : a) Active Employees b) Pensioners	 430.3 206.0
Total Liability as at 30.06.2009	**636.3**
Required Contribution Rate, as %age of Eligible Salaries, to fund Future Accrual of Benefits	27.10%

The above results reveal that early retirements have significant impact on the accrued Pension liability of the in-service active employees. The accrued liability of active employees, based on early retirement rates used in 2007 actuarial valuation, increases by 9.9% (from Rs.391.7 billion to Rs.430.3 billion). The rate required to fund only the future accrual of Pension benefits increases from 24.4% to 27.1% of Pensionable Salary reflecting an increase of 11.1%.

This above sensitivity analysis shows that the accrued and future Pension liability of active employees of Punjab Government is significantly sensitive to early retirement pattern of the employees. The reason is that employee can retire after completing 25 years of service and entitled an unreduced Pension payable immediately and can commute up to a maximum of 35% of his/her Pension at a significantly higher commutation rate as compared to normal retirement factor. Thus, it would be advisable to monitor the pattern of early retirements in future and modify the valuation results accordingly (if required).

1.7 Cash Flow Projections

The expected pension payments split by regular pension and commutation over the next 30 years under Punjab Government Pension Scheme have been estimated on a combined basis for both active employees in conjunction with existing pensioners.

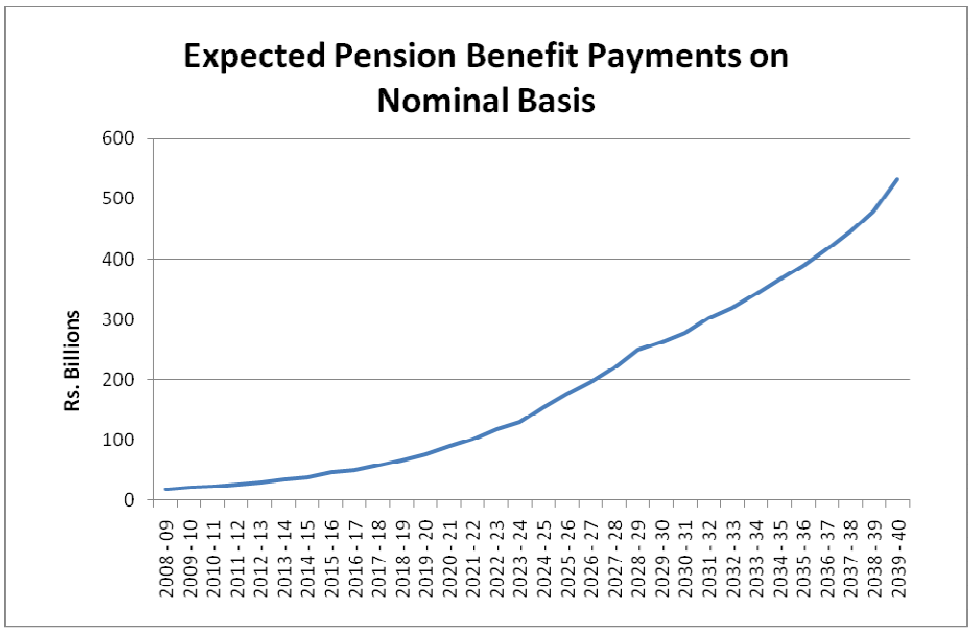
The following table shows the cash-flow projections on a real and nominal basis assuming NIL early retirements:

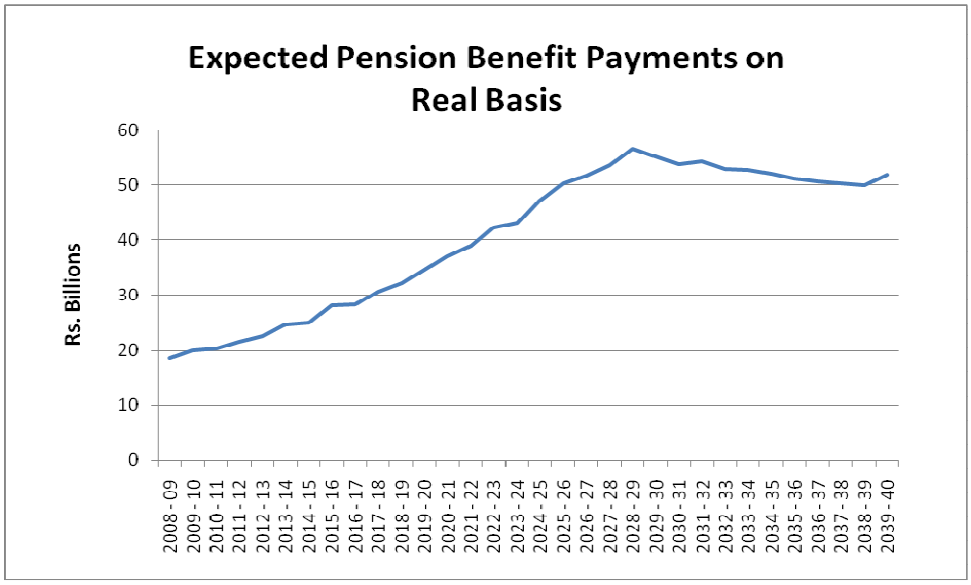
			Total Expense			
			on Nominal Basis		on Real Basis	
Year	Expected Pension	Expected Commutation	Expense	Y to Y % Increase	Expense	Y to Y % Increase
2009 - 10	16.4	4.8	21.2	13%	20.0	7%
2010 - 11	18.2	5.2	23.4	10%	20.4	2%
2011 - 12	20.3	6.3	26.6	14%	21.6	6%
2012 - 13	22.7	7.4	30	13%	22.6	5%
2013 - 14	25.7	9.6	35.3	18%	24.7	9%
2014 - 15	28.7	9.9	38.5	9%	25.0	1%
2015 - 16	32.9	13.6	46.6	21%	28.1	12%
2016 - 17	36.9	13.9	50.8	9%	28.3	1%
2017 - 18	42.1	17.3	59.4	17%	30.8	9%
2018 - 19	47.7	19.5	67.2	13%	32.3	5%
2019 - 20	54.4	23.1	77.5	15%	34.6	7%
2020 - 21	62.2	27.2	89.4	15%	37.0	7%
2021 - 22	70.9	30.6	101.5	14%	39.0	5%
2022 - 23	81.5	37.2	118.7	17%	42.3	8%
2023 - 24	92.2	38.6	130.8	10%	43.1	2%
2024 - 25	106.2	48.1	154.3	18%	47.3	10%
2025 - 26	121.8	55.4	177.2	15%	50.4	7%
2026 - 27	137.9	58.1	196.1	11%	51.7	3%
2027 - 28	156.2	63.4	219.5	12%	53.6	4%
2028 - 29	177.4	72.2	249.5	14%	56.5	5%
2029 - 30	196.8	67.1	263.8	6%	55.2	-2%

Year	Expected Pension	Expected Commutation	Expense	Y to Y % Increase	Expense	Y to Y % Increase
2030 - 31	216.3	61.6	277.9	5%	53.7	-3%
2031 - 32	238.6	64.5	303	9%	54.3	1%
2032 - 33	259.9	59.4	319.3	5%	52.9	-3%
2033 - 34	283.3	60.3	343.6	8%	52.7	0%
2034 - 35	307.3	59	366.3	7%	52	-1%
2035 - 36	331.9	57.3	389.3	6%	51.1	-2%
2036 - 37	358	57.9	415.9	7%	50.6	-1%
2037 - 38	385.6	60.2	445.8	7%	50.3	-1%
2038 - 39	415	63.7	478.7	7%	50	0%
2039 - 40	450.5	82.2	532.7	11%	51.8	3%

The expected nominal pension cash flows increase by around 14% over the next 20 years.

The following gives a graphical representation of cash flow projections over the next 30 years.





It can be seen that there are no visible jumps in the total expected cash-flows in any year (under both nominal and real bases) and the amounts have a relatively smooth progression over time.

The commutation payments over the next 30 years do have sudden changes on nominal basis. For example in the year 2013-14 commutation increases by 31%, then there is a decline in percentage increase to 3% in 2014-15 and then again there is an increase of 39% in 2015-16. Commutation payments are one time expense and this pattern in percentage increases is mostly due to the distribution of the active employees determined from the given data (resulting in varying patterns of retirements in different years).

It needs to be noted that while there is significant jump in pension outgoes over the years on nominal basis, the increase on real basis is much slower, with pension amount increasing by around 6% per annum for the next 17 years and remaining virtually static thereafter.

CHAPTER 2
Government of Punjab General Provident Fund Scheme

2.1 Introduction

General Provident (GP) Fund Scheme of Punjab Government is a defined contribution scheme in which employees are the sole contributors to their account balances according to the prescribed subscription rate which are based on pay scales of the employees. GoPb deducts these contributions from salaries and utilizes the amounts in meeting its expenditures. GoPb maintains a book entry for contribution by employees which is credited with an interest rate announced by the Government on an annual basis. The account balances are paid to employees at the time of cessation of their service. The Government does not provide a benefit as such to the employees and the money paid to the employees at the end of service is merely the payment of loan or debt based on the announced interest rates for various years.

This chapter gives details on the accrued liability of Government of Punjab General Provident Fund Scheme and the related expected future cash-outflows. Details of the sources of data, data analysis and suggestive measures to remove anomalies are also part of this chapter.

2.2 Data

2.2.1 Data Sources

Data / information for estimating the accrued GP Fund liability and future cash outflows was provided by the Accountant General (AG) Office. The following are the details of the data / information obtained:

Grade-wise Subscription Rates and Year-wise Interest Rates:

The information pertaining to grade-wise rate of subscription of GP Fund and year-wise rate of interests for the period from 1953 to 2007 was provided by the Accountant General (AG) Office. This information is summarised in the following tables:

Rates of subscription towards General Provident Fund effective from 1st September, 2008 vide circular letter no. Fdsr.1-2-1/95 dated 23-08-2008

Scale	Minimum	Maximum	Mean	Rate of monthly Subscription (Amount in Rs.)	Remarks	
1	2	3	4	5	6	
B-1	2970	5670	4320	130	Minimum rates of subscription	
B-2	3035	6035	4535	230	(on mean) will be as under:-	
B-3	3140	6740	4940	250	BPS	Subscription
B-4	3240	7440	5340	270	B-1	3.00%
B-5	3340	8140	5740	290	B-2-11	5%
B-6	3430	8680	6055	305	BS-12-22	8%
B-7	3530	9230	6380	320		
B-8	3665	9965	6815	340		
B-9	3820	10720	7270	365		
B-10	3955	11755	7855	395		
B-11	4115	12365	8240	415		
B-12	4355	13655	9005	720		
B-13	4645	14845	9745	780		
B-14	4920	16320	10620	850		
B-15	5220	17820	11520	925		
B-16	6060	20160	13110	1050		
B-17	9850	24650	17250	1380		
B-18	12910	31510	22210	1780		
B-19	19680	39080	29380	2350		
B-20	23345	44485	33915	2715		
B-21	25880	49680	37780	3025		
B-22	27680	55470	41575	3330		

Year-wise Interest Rates announced by the Government on GP Fund Balances

Year	Interest Rate %	Bonus %	Year	Interest Rate %	Bonus %
1953-1954	4.00	Nil	1981-1982	13.00	Nil
1954-1955	4.00	Nil	1982-1983	13.20	Nil
1955-1956	4.00	Nil	1983-1984	14.00	Nil
1956-1957	4.00	Nil	1984-1985	14.60	Nil
1957-1958	4.00	Nil	1985-1986	14.72	Nil
1958-1959	4.00	Nil	1986-1987	14.66	30
1959-1960	4.00	Nil	1987-1988	14.00	30
1960-1961	4.00	Nil	1988-1989	14.84	30
1961-1962	4.00	Nil	1989-1990	15.93	30
1962-1963	4.00	Nil	1990-1991	15.93	30
1963-1964	4.00	Nil	1991-1992	15.93	30
1964-1965	5.00	Nil	1992-1993	15.93	30
1965-1966	5.25	Nil	1993-1994	15.54	30
1966-1967	6.00	Nil	1994-1995	15.44	30
1967-1968	6.00	Nil	1995-1996	15.49	30
1968-1969	6.25	Nil	1996-1997	16.76	30
1969-1970	6.25	Nil	1997-1998	17.51	30
1970-1971	6.25	Nil	1998-1999	17.53	30
1971-1972	6.50	Nil	1999-2000	16.11	30
1972-1973	7.25	Nil	2000-2001	15.00	Nil
1973-1974	8.25	Nil	2001-2002	15.00	Nil
1974-1975	10.25	Nil	2002-2003	14.50	Nil
1975-1976	10.50	Nil	2003-2004	13.50	Nil
1976-1977	10.75	Nil	2004-2005	12.00	Nil
1977-1978	11.75	Nil	2005-2006	10.50	Nil
1978-1979	12.00	Nil	2006-2007	11.00	Nil
1979-1980	12.50	Nil	2007-2008	12.50	Nil
1980-1981	13.00	Nil			

Initially AG office provided "Balances" and "Advances" of GP Fund of the employees of Lahore district (separately for Provincial and District Government employees):

GP Fund Balances (Lahore District)

The following table shows the total number of records for GP Fund Balances having details of Net GPF Balances from SAP/R3 made available for Provincial and District Government employees:

	Number of Employees
Provincial Government	85,075
District Government	25,658
Total	**110,733**

GP Fund Advances (Lahore District)

The following table shows the total number of records for GP Fund Advances against GP Fund balances made available for Provincial and District Government employees:

	Number of Employees
Provincial Government	36,867
District Government	13,818
Total	**50,685**

GP Fund Balances and Advances (Other Districts):

Subsequently, the following additional employee information was received from AG office for 8 districts:

- Personal #
- BPS
- Opening GPF balance
- Monthly Subscription
- Adjustment in Advances
- Advances
- Advances Recovered
- Permanent Advances
- Closing GPF balances

However, there was no information of date of birth, date of appointment and Salary etc.

2.2.2 Data Analysis

The data received was analysed to check for any anomalies. Details of analysis and anomalies found in each data source are as follows:

GP Fund Balances (Lahore District):

Information of **3,988** employees was discarded from GP Fund Balance records because of the following reasons:

Discarded due to	Number of Records
Duplicate Records	3,987
No name and Nil Balance	1
Total:	**3,988**

The remaining **106,745** records from this data were available to estimate the GPF Liability. However, there was no information related to date of birth, date of appointment and salary in the above information.

Average Net GP Fund balance worked out to be **Rs. 86,218.**

GP Fund Advances (Lahore District)

From Advances records, a total of **19,445** entries were discarded, all of which were duplicate entries. The remaining **31,240** records from this data were available to estimate the Advances.

GP Fund Balances and Advances (Other Districts)

Total records provided in this data were **195,226**. The anomalous records of **49,812** were discarded due to the following reasons:

Anomaly	Number of Records
Balance (for lower grade) greater than **Rs. 4 million**	2
GP Fund Balance less than 0	1,031
Duplicate Records	5,509
GP Fund Balance equal to 0	6,127
Monthly Subscription equal to 0	37,143
Total:	**49,812**

The remaining records were **145,414**.

It was **not** possible to use the provided information for "other than Lahore Districts" because the district wise average balances were significantly lower as compared to those provided for Lahore district earlier (**Rs. 86,218**) and were much lower than the expected range of Rs.75,000 –Rs.85,000. It appeared that the accumulated GPF balances were not updated from the date of start of employment.

Summary of the analysis is as follows:

Districts	Number of Employees	Average GP Fund Balance
Bhukkar	10,192	Rs.10,670
Faisalabad	43,074	Rs.41,314
Jhang	19,963	Rs.8,342
Khushab	8,443	Rs.15,936
Layyah	10,895	Rs.17,630
Mianwali	11,853	Rs.11,198
Sargodha	28,371	Rs.21,599
Toba Tek Singh	12,623	Rs.26,865
Total	145,414	Rs.23,836

Thus, we conducted our GPF study to determine the underlying liability of the Government of Punjab and cash-flow projections on the Lahore district information provided earlier.

2.2.3 Suggestions for the Improvement in GP Fund Balances and Advances Database

Considering the existing anomalies in the active employees' information pertaining to their GP Fund, we recommend that:

- GPF information during transfers of employees should be recorded properly and should not create repetitive records of the same employee. This can be done by tracking the employee through its unique employee number
- Date of birth, date of appointment, pay scale, his/her nominee, salary history, GPF balances, GPF loan balances, applicable subscription rate, data of the nominee and other relevant information of each employee should be cross checked through his/her original appointment record and verifying it with the employee

- Dummy entries should be avoided because they may cause significant problems at the time of settlement of GP Fund benefits
- A proper and efficient networking/communication system is required among various districts of Punjab Government to maintain GP Fund information of employees

It is strongly recommended that various data checks should be applied on the database after feeding in the information related to the GP Fund of employees. For instance:

- Age of an employee should not be greater than 60 years
- Age of an employee should not be less than 18 years
- Date of Birth should be earlier than Date of Appointment
- Salary of an employee should not be less than the minimum salary for his/her relevant Pay Scale
- GPF subscription rate of employee should be consistent with Pay Scale
- GPF balance should be consistent with Pay Scale of the employee
- GPF balance should be consistent with service of the employee
- GPF balance or loan amounts should not be significantly high

2.3 Valuation Methodology & Assumptions

Methodology used for Data Preparation

For purposes of estimating the Net GPF Liability, the ratio of Net GPF Balance to Basic Salary of each employee was required. Since the information for Basic Salary was not available in the GPF data, the following methodology was adopted to prepare the data.

The Net GPF Balance information was matched with the **59,769** records of active employees (obtained for pension liability calculations). **2,223** records in the active employee data did not match with the GPF records and were therefore discarded. Thus, the remaining **57,546** records were available to calculate Net GPF Balance to Basic Salary ratio.

The liability was estimated using the following assumptions:

- the average pay for each past service band in the sample of **57,546** will remain the same for the total population of active employees **817,624**.
- the population will have the same percentage of loans from their GP Fund Balance as that of the sample.

The average GP Fund balances of **57,546** employees were enhanced such that their average balance works out to **Rs. 86,218** (i.e. the average for the total **106,745** employee records).

For purpose of estimating the Advances, the ratio of Advances to Basic Salary of each employee was required. On similar lines as above, the Advances information was matched with the **59,769** records of active employees (obtained for pension calculations). The advances were estimated assuming that the population will have the same ratio of Advances to Basic Salary as that of the sample.

Since the 2 primary factors impacting the GP Fund Balance are the Basic Salary and Past Service, service-wise distribution of **57,546** employees with respect to their Basic Pay and total GPF Balance was prepared. The ratio of total Net GPF Balance and total Basic Salary was then determined for each service band of the distribution.

Similarly, the 2 primary factors impacting Advances are the Basic Salary and Past Service. As such, service-wise distribution of **57,546** employees with respect to their Basic Pay and total Advances was prepared. The ratio of Advances to Basic Salary was then determined for each service band of the distribution.

The resulting distribution and ratios are provided in the tables below:

Sample Data Distribution							
Years of Service	**Number of Employees**	**Total Basic Salary**	**GPF/Basic Salary Ratio**	**Years of Service**	**Number of Employees**	**Total Basic Salary**	**GPF/Basic Salary Ratio**
> 0 & <= 1	125	488,695	0.39	> 23 & <= 24	1,527	18,225,445	13.97
> 1 & <= 2	2,382	8,971,885	0.51	> 24 & <= 25	1,304	15,586,815	14.07
> 2 & <= 3	4,916	22,474,350	1.44	> 25 & <= 26	1,069	12,592,330	13.84
> 3 & <= 4	2,522	10,275,820	2.23	> 26 & <= 27	766	9,971,770	14.55
> 4 & <= 5	2,364	10,305,150	3.41	> 27 & <= 28	798	9,904,780	16.60
> 5 & <= 6	2,782	17,418,137	11.02	> 28 & <= 29	762	9,987,620	17.19
> 6 & <= 7	961	4,618,210	4.01	> 29 & <= 30	470	6,650,450	19.10
> 7 & <= 8	1,119	5,940,925	4.24	> 30 & <= 31	463	6,911,200	16.67
> 8 & <= 9	1,289	7,399,725	6.00	> 31 & <= 32	351	5,527,010	19.85
> 9 & <= 10	2,238	13,144,335	7.34	> 32 & <= 33	573	8,813,955	22.12
> 10 & <= 11	595	4,350,125	7.76	> 33 & <= 34	457	7,866,708	23.78
> 11 & <= 12	3,068	22,232,190	8.90	> 34 & <= 35	323	5,366,500	25.98
> 12 & <= 13	1,183	10,161,715	8.10	> 35 & <= 36	195	3,394,640	24.22
> 13 & <= 14	2,282	16,159,158	9.25	> 36 & <= 37	158	2,858,640	23.26
> 14 & <= 15	633	6,356,028	11.69	> 37 & <= 38	96	1,730,335	20.42
> 15 & <= 16	5,038	36,139,635	9.88	> 38 & <= 39	32	418,055	27.26
> 16 & <= 17	750	6,532,215	9.63	> 39 & <= 40	34	490,460	20.00
> 17 & <= 18	916	9,084,230	12.15	> 40 & <= 41	33	516,255	23.94
> 18 & <= 19	5,203	42,776,819	11.17	> 41 & <= 42	1	12,170	84.24
> 19 & <= 20	1,791	19,718,055	11.86	> 42 & <= 43	-	-	0.00
> 20 & <= 21	1,534	17,153,780	12.29	> 43 & <= 44	1	7,980	67.37
> 21 & <= 22	2,903	32,007,470	14.24	> 44 & <= 45	-	-	0.00
> 22 & <= 23	1,539	17,104,425	13.73	**TOTAL:**	**57,546**	**467,646,195**	

Future Interest Rate on GP Fund Balances

For determining the future cash-flow projections related to GP Fund of Punjab Government employees, it has been assumed that average interest rate credited by the Government to GP Fund balances would be 12% per annum.

Growth Rate of Monthly GP Fund Subscription

Rate of Increase in Monthly GP Fund Subscription, for future cash-flow projections, has been assumed at the rate of 8% per annum.

Other Economic and Demographic Assumptions

For GP Fund cash-flow projections, all other economic and demographic assumptions such as rate of increase of future salaries, mortality and withdrawals rates etc. are same as used for Pension liability valuation and described in the previous Chapter.

2.4 Valuation Results

The following table shows the resulting Net GP Fund liability after applying the methodology explained earlier and the assumptions used:

Sample Data Distribution				Total Population	
Years of Service	**Number of Employees**	**Total Basic Salary**	**GPF/Basic Salary Ratio**	**Total Basic Pay**	**Total Net GPF Liability**
> 0 & <= 1	125	488,695	0.39	7,199,422	2,826,298
> 1 & <= 2	2,382	8,971,885	0.51	132,173,202	67,299,035
> 2 & <= 3	4,916	22,474,350	1.44	331,090,602	477,444,876
> 3 & <= 4	2,522	10,275,820	2.23	151,382,684	338,170,915
> 4 & <= 5	2,364	10,305,150	3.41	151,814,772	516,958,221
> 5 & <= 6	2,782	17,418,137	11.02	256,602,815	2,828,869,130
> 6 & <= 7	961	4,618,210	4.01	68,035,157	272,577,944
> 7 & <= 8	1,119	5,940,925	4.24	87,521,305	370,770,552
> 8 & <= 9	1,289	7,399,725	6.00	109,012,248	654,117,623
> 9 & <= 10	2,238	13,144,335	7.34	193,641,453	1,420,500,619
> 10 & <= 11	595	4,350,125	7.76	64,085,747	497,102,844
> 11 & <= 12	3,068	22,232,190	8.90	327,523,117	2,916,563,542
> 12 & <= 13	1,183	10,161,715	8.10	149,701,698	1,213,264,283
> 13 & <= 14	2,282	16,159,158	9.25	238,055,614	2,201,338,584
> 14 & <= 15	633	6,356,028	11.69	93,636,574	1,094,285,535
> 15 & <= 16	5,038	36,139,635	9.88	532,406,656	5,262,466,703
> 16 & <= 17	750	6,532,215	9.63	96,232,149	926,435,017
> 17 & <= 18	916	9,084,230	12.15	133,828,261	1,626,533,526
> 18 & <= 19	5,203	42,776,819	11.17	630,185,201	7,037,418,838
> 19 & <= 20	1,791	19,718,055	11.86	290,485,051	3,443,879,922
> 20 & <= 21	1,534	17,153,780	12.29	252,708,326	3,105,894,884
> 21 & <= 22	2,903	32,007,470	14.24	471,531,880	6,716,605,065
> 22 & <= 23	1,539	17,104,425	13.73	251,981,231	3,460,501,991
> 23 & <= 24	1,527	18,225,445	13.97	268,496,021	3,750,034,327
> 24 & <= 25	1,304	15,586,815	14.07	229,623,903	3,229,797,030
> 25 & <= 26	1,069	12,592,330	13.84	185,509,353	2,568,186,945
> 26 & <= 27	766	9,971,770	14.55	146,903,440	2,137,093,304
> 27 & <= 28	798	9,904,780	16.60	145,916,548	2,422,572,491
> 28 & <= 29	762	9,987,620	17.19	147,136,942	2,529,693,916
> 29 & <= 30	470	6,650,450	19.10	97,973,979	1,871,083,395
> 30 & <= 31	463	6,911,200	16.67	101,815,331	1,696,818,870
> 31 & <= 32	351	5,527,010	19.85	81,423,537	1,616,388,934
> 32 & <= 33	573	8,813,955	22.12	129,846,588	2,872,561,170
> 33 & <= 34	457	7,866,708	23.78	115,891,810	2,756,456,638

Sample Data Distribution				Total Population	
Years of Service	**Number of Employees**	**Total Basic Salary**	**GPF/Basic Salary Ratio**	**Total Basic Pay**	**Total Net GPF Liability**
> 34 & <= 35	323	5,366,500	25.98	79,058,914	2,054,038,710
> 35 & <= 36	195	3,394,640	24.22	50,009,607	1,211,073,996
> 36 & <= 37	158	2,858,640	23.26	42,113,291	979,664,715
> 37 & <= 38	96	1,730,335	20.42	25,491,180	520,412,394
> 38 & <= 39	32	418,055	27.26	6,158,758	167,882,393
> 39 & <= 40	34	490,460	20.00	7,225,424	144,479,493
> 40 & <= 41	33	516,255	23.94	7,605,433	182,104,148
> 41 & <= 42	1	12,170	84.24	179,288	15,103,119
> 42 & <= 43	-	-	0.00	-	-
> 43 & <= 44	1	7,980	67.37	117,561	7,920,065
> 44 & <= 45	-	-	0.00	-	-
TOTAL:	57,546	467,646,195		6,889,332,073	79,185,192,000

The estimate of total Net GP Fund Liability as at June 30, 2009 is Rs.79.185 billion.

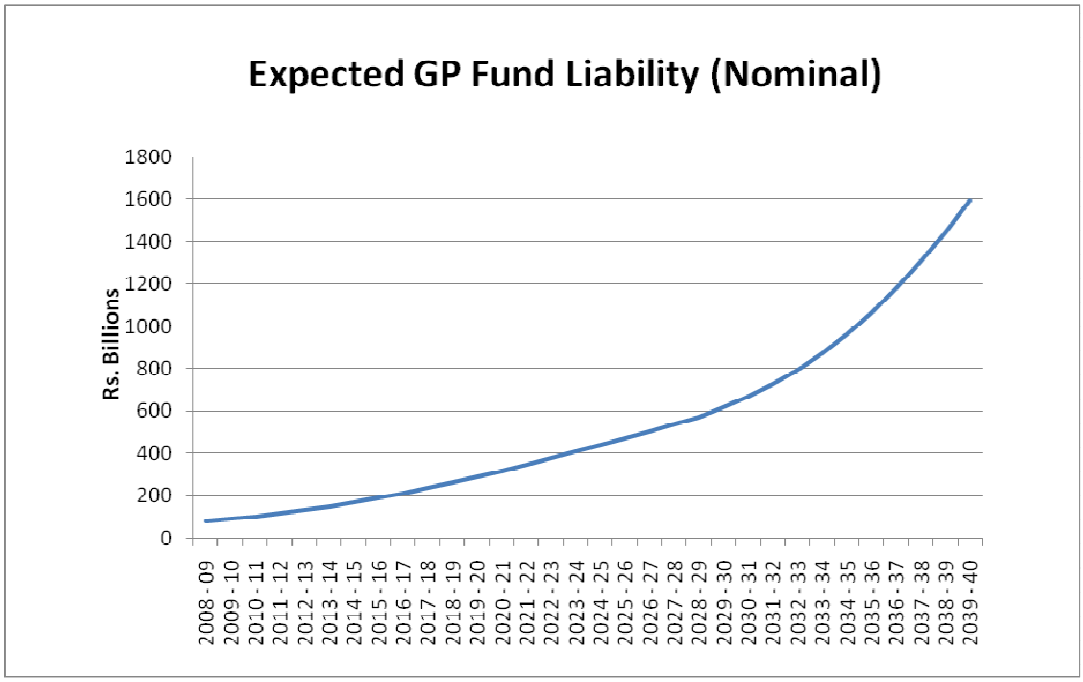
The growth in GP Fund balances (i.e. liability), assuming future interest credited is 12% per annum, for the next 30 years at 5 year intervals on nominal and real basis (assuming 2008-09 as the base year) is given the following table:

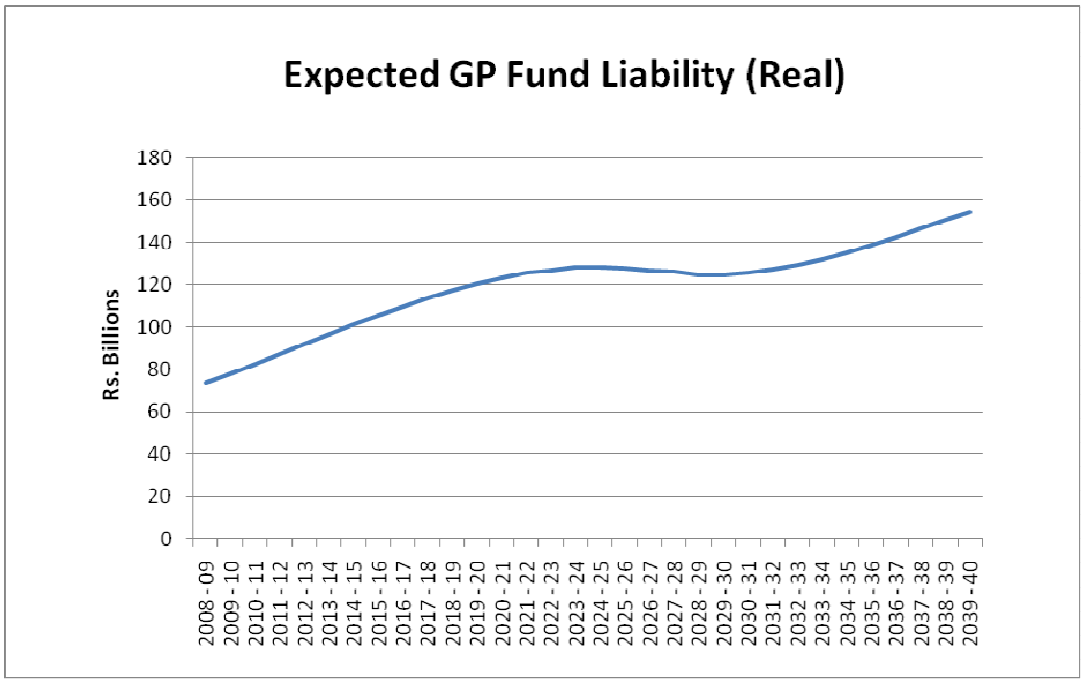
Year	Estimated GPF Liability at fiscal year End (Nominal Basis)	Estimated GPF Liability at fiscal year End (Real Basis)
2009 – 10	89.8	77.8
2013 – 14	148.6	96.4
2018 – 19	260.3	117.4
2023 – 24	408.6	128.0
2028 – 29	571.8	124.6
2033 – 34	873.1	131.8
2037 – 38	1305.8	146.3
2039 – 40	1597.5	154.1

The above table shows that the amount of GP Fund liability on nominal basis would increase from Rs. **89.8 billion** in 2009-10 to Rs. **1,597.5 billion** in 2039-40. The liability is estimated to increase to 154.1 billion in real terms in 2039-40.

An important fact to note is that the government is expected to consume approximately Rs. 5.0 billion of employees' money in 2009-10, which is projected to escalate over time.

The growth in GPF balances on nominal and real bases can be gauged from the following graphs:





Although, GP Fund liability tends to increase constantly on a nominal basis, but on a real basis it tends to stabilize and then slightly decline during the years 2023-24 to 2029-30.

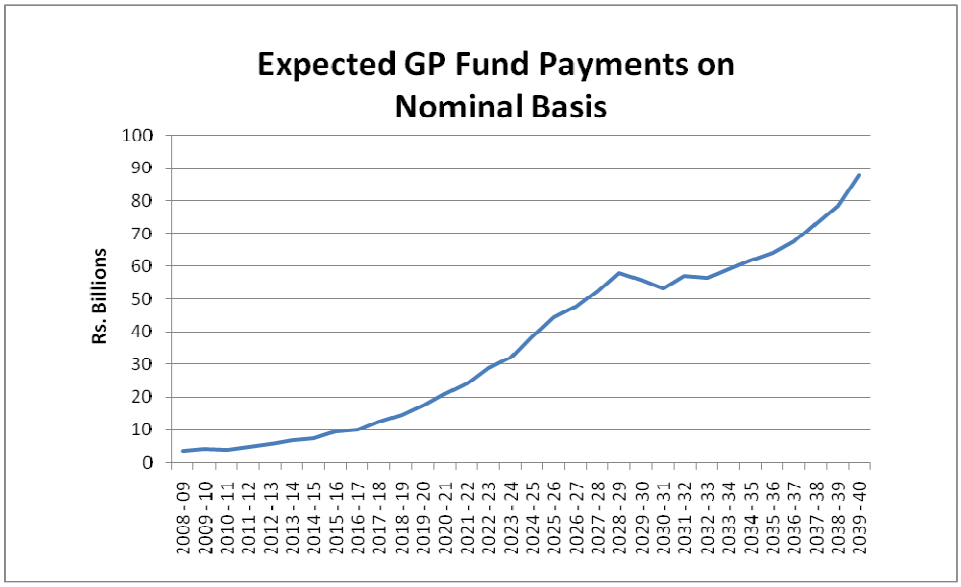
Keeping in view the estimated GP Fund liability on the Punjab Government and its rapid growth in future (liability of **Rs. 1,597.5 billion** in 2039-40), it is strongly recommended that the Government devise a proper strategy to fund this debt. The ideal methodology is to contribute all future subscriptions regularly to the recently set up GP Fund and devise an amortization schedule to fund past service GP Fund liability.

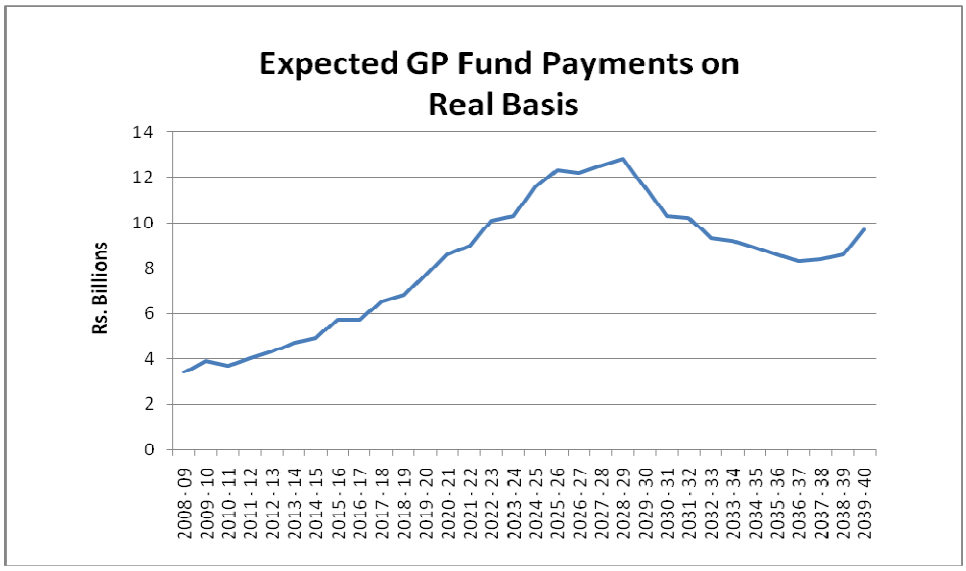
2.5 Cash Flow Projections

The following table shows the cash flow projections of the GP Fund over the next 30 years on a nominal and real basis:

	Total Expense			
	on Nominal Basis		on Real Basis	
Year	Expense	Y to Y % Increase	Expense	Y to Y % Increase
2009 - 10	4.2	14%	3.9	15%
2010 - 11	4.1	-2%	3.7	-5%
2011 - 12	4.9	20%	4.0	8%
2012 - 13	5.6	14%	4.3	8%
2013 - 14	6.8	21%	4.7	9%
2014 - 15	7.4	9%	4.9	4%
2015 - 16	9.5	28%	5.7	16%
2016 - 17	10.2	7%	5.7	0%
2017 - 18	12.7	25%	6.5	14%
2018 - 19	14.6	15%	6.8	5%
2019 - 20	17.5	20%	7.7	13%
2020 - 21	21.2	21%	8.6	12%
2021 - 22	24.2	14%	9.0	5%
2022 - 23	29.0	20%	10.1	12%
2023 - 24	32.0	10%	10.3	2%
2024 - 25	38.7	21%	11.6	13%
2025 - 26	44.6	15%	12.3	6%
2026 - 27	47.7	7%	12.2	-1%
2027 - 28	52.6	10%	12.5	2%
2028 - 29	58.1	10%	12.8	2%
2029 - 30	56.1	-3%	11.6	-9%
2030 - 31	53.6	-4%	10.3	-11%
2031 - 32	57.3	7%	10.2	-1%
2032 - 33	56.6	-1%	9.3	-9%
2033 - 34	59.3	5%	9.2	-1%
2034 - 35	62.0	5%	8.9	-3%
2035 - 36	64.3	4%	8.6	-3%
2036 - 37	67.6	5%	8.3	-3%
2037 - 38	73.1	8%	8.4	1%
2038 - 39	78.7	8%	8.6	2%
2039 - 40	87.9	12%	9.7	13%

The following gives a graphical representation of cash flow projections over the next 32 years.





The above graphs show increase in GP Fund payments over the presented period of 32 years. There is a visibly rapid increase in GP Fund payments on nominal basis after which the payments have sudden dip in years 2029-30. Overall, even on real basis, the increase in GP Fund cash outflows is more significant than the increase in pension outgoes.

CHAPTER 3
Funding Options

3.1 Introduction

The main objective of this chapter is to examine different funding options for the Govt. of Punjab Pension Fund and General Provident (GP) Fund. Keeping in view the accrued liabilities of the two Funds and expected future cash-outflows for these benefit schemes, it discusses various related issues and suggests options to fund them.

On March 7, 2007, Government of Punjab setup a Pension Fund under the Punjab Pension Fund Act, 2007 (after approval from the Provincial Legislature). Funding of the Pension Fund is to be made through budgetary allocations. As at 30.06.09, the assets of the Pension Fund amount to **Rs. 3 billion**. In addition, the Government has recently approved the legislation to set up a General Provident (GP) Fund. The funding options discussed are made on the assumption that the Pension Fund will have **Rs. 12 billion** by the end of fiscal year 2009-10.

The amount of GP Fund payment of an employee is the accumulated contributions with interest deducted from his/her salaries during the service. GP Fund is in the process of being established and the required legislation has been enacted.

Punjab Government is contemplating various possibilities of capital injections into the Funds. It is, however, extremely important to determine adequacy of capital injections versus objectives to be achieved by these contributions. Government can then decide whether it needs to make a change in proposed capital contribution amount and/or objectives of funding.

This chapter of the Report is divided into the following sections, each discussing various issues as highlighted above:

i. Assumptions
ii. Different Options for Funding of Pension and GP Fund Liabilities
iii. Optimal Funding Strategy for Pension Benefits and GP Fund
iv. The attached appendices VIII and IX will be used as supportive documents.

3.2 Assumptions

i. Punjab Government Revenue:

Punjab Government Revenue for the year 2008-2009 is assumed to be Rs.315 billion.

ii. Growth Rate of Punjab Government Revenue:

Punjab Government Revenue is assumed to grow at 10% per annum.

iii. Revenue Surplus:

The amount of Revenue Surpluses, provided by Finance Department (FD) for the years 2009-10 and 2010-11 is provided in the table below:

Year	Revenue Surplus (Rs. billion)
2009-10	154
2010-11	162

iv. Growth Rate of Revenue Surplus:

It has been assumed, as per the input from Finance Department that Revenue Surplus will increase at the rate of 10% per annum from 2011-12 onwards.

v. Growth Rate of Monthly GP Fund Subscription:

Rate of Increase in Monthly GP Fund Subscription of 8% per annum has been assumed.

vi. Return on Investments:

Capital Injections/ contributions in the Fund are assumed to draw a return of 12% per annum.

vii. Comparison of nominal versus real assumptions

Assumption	Nominal	Real (in excess of inflation)
Pension Indexation Rate	8%	0%
Salary Increase Rate	11%	3%
Growth Rate of Punjab Government Revenue	10%	2%
Growth Rate of Revenue Surplus	10%	2%
Growth Rate of Monthly GP Fund Subscription	8%	0%
Return on Investments	12%	4%

3.3 Different Options for Funding of Pension and GP Fund Liabilities

This section provides some of the more viable funding options that may be considered to fund the GP Fund and Pension liabilities. These and other funding options that were considered are provided in detail in Appendices VIII and X.

Punjab Government is contemplating various possibilities of capital injections into the Fund. It is, however, extremely important to determine adequacy of capital injections versus objectives to be achieved by these contributions. Government can then decide whether it needs to make a change in proposed capital contribution amount and/or objectives of funding.

The most appropriate Funding approach in case of a GP Fund can be that Government should start making contributions deducted from the salaries of the employees to the General Provident Fund on regular basis and amortize the existing accrued liability over a period of 10, 20 and 30 years. For example if Government starts making contributions (deducted from employees) to GP Fund from 2010-11 and amortize the accumulated GP Fund liability of **Rs.89.8 billion** projected at 30.06.2010, the annual instalment for liability (apart from regular contribution) for different durations would be as follows:

Amortization Period	Annual Instalment payable at the middle of the Year
10 Years	15.0 billion
20 Years	11.4 billion
30 Years	10.5 billion

A suggested funding option for GP Fund is as follows:

- annual GP Fund contributions deducted from the salaries of the employees are contributed to the GP Fund; and
- expected past service GP Fund liability of Rs.89.8 million is amortized over 30 years with increasing instalments;

The GP Fund contributions for next 30 years would be as follows:

Rs. Billion

Year	Past Liability Amortization Instalment	Annual Regular Contribution deducted from Salaries	Total Amount of Contribution to GP Fund
2010 - 11	2.0	5.6	7.6
2011 - 12	2.0	6.2	8.2
2012 - 13	3.0	6.8	9.8
2013 - 14	3.0	7.5	10.5
2014 - 15	4.0	8.3	12.3
2015 - 16	5.1	9.2	14.3
2020 - 21	11.6	14.8	26.4
2025 - 26	20.7	22.8	43.5
2030 - 31	33.3	33.6	66.9
2035 - 36	50.8	51.5	102.0
2039 - 40	69.6	74.6	144.0

The year-wise GP Fund contributions, if past service liability is amortized over 30 years, 20 years and 10 years are given in Example A, Example B and Example C of Appendix VIII respectively.

In case of past liability amortization, the Government can start with lower amount and increase it over time.

For Pension Fund, it is very important to define the short and long term objectives before deciding on a funding strategy as a multitude of routes can be taken.

Examples of some of the objectives for Pension Fund are as follows:

i. Pension Fund is accumulated at a relatively low rate in the first few years (say 5-10 years) and then earnings from the Fund are used to make payments in excess of expectations (if any) to make pension payments a smooth percentage of the revenue of Government of Punjab. For instance, if the pension payments during a fiscal year are in excess of 6% of Revenue due to relatively high retirement of the employees, the additional payments may partially or fully funded by the Pension

Fund assets. Alternatively, if the Government revenue is reasonably short of target, or expenses are required in some other priority area, the interest earnings on the Fund can meet partial pension expenditure to create fiscal space.

ii. Earnings from the Fund are used to make payments in excess of 6% of the revenue of Government of Punjab each year for a period of 10 years.

iii. Earnings from the Fund are used to make 30% of payments of the total pension expense; the remaining 70% are met by the Government of Punjab each year for a period of 10 years.

iv. Earnings from the Fund are used to make payments 50% of the payments in excess of Rs.16 billion each year for a period of 10 years.

v. Earnings from the Fund are used to make payments in excess of 10% or 20% of Revenue Surplus each year for a period of 10 years.

However, it is important that any funding strategy for the Pension Fund should be finalized keeping in view the current and projected relatively low share of future public resources committed to pension expenditure (i.e. the IPD) as compared to other countries. Implicit Pension Debt (IPD) is the value of pension commitment of the Government for future pension payouts and therefore has some characteristics in common with conventional public-sector debt. The accrued pension liability is the commonly accepted value used to represent the IPD.

The ratio between IPD and current GDP is an important indicator of the share of future public resources committed to pension expenditure. The larger the ratio, the higher the risk that if GDP growth is not adequate to cover future pension liabilities, certain changes in fiscal or benefit changes will be required.

The IPD ratio for Government of Punjab pension scheme is estimated to be in range between 11-12%. The following table summarizes the IPD ratios for some comparable economies from across the world. These economies have Pay As You Go (PAYG) (i.e. unfunded) civil service and national pension schemes.

	Year	Civil Service	National Schemes for Private Sector Employees)
Brazil	1998	**92%**	284%
Iran	2001	**38%**	64%
Korea	1995	**7%**	33%
Philippines	1997	**17%**	90%
Turkey	1997	**75%**	71%

	Central Civil Employees	State Civil Employees
India (2004)	13%	43%

It should be noted that accrued pension liability and therefore the IPD ratios are sensitive to economic and demographic assumptions used.

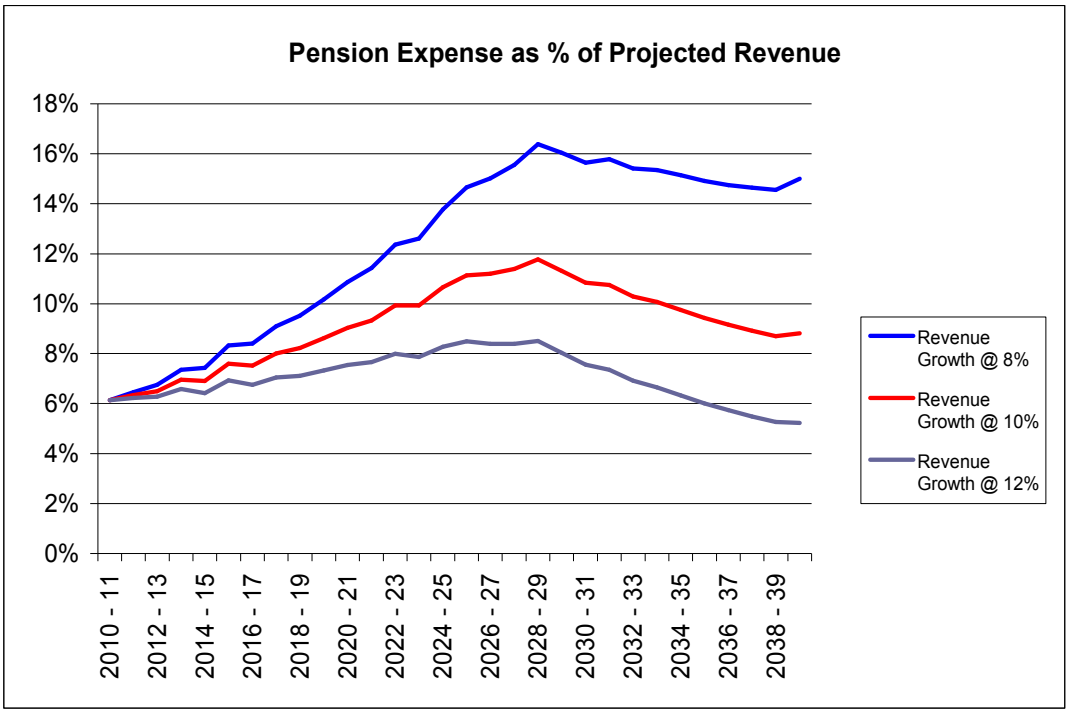
The above comparison shows that the IPD ratio for Government of Punjab employees' pension scheme is not excessive when compared with other countries.

Besides comparing the IPD ratio with other countries, it may be useful to work out the growth of Pension payment expense as % of annual Revenue over the next 30 years if it grows at the assumed rate of 10% per annum or varies by 2% in either direction. The results at quinquennial years are as follows:

	Pension Expense as %age of Annual Revenue		
Year	**Revenue Growth @ 8%**	**Revenue Growth @ 10%**	**Revenue Growth @ 12%**
2010 - 11	6%	6%	6%
2015 - 16	8%	8%	7%
2020 - 21	11%	9%	8%
2025 - 26	15%	11%	8%
2030 - 31	16%	11%	8%
2035 - 36	15%	9%	6%
2039 - 40	15%	9%	5%

Year-wise split is provided in Appendix VII.

The following is the graphical representation of pension expenditure as a percentage of projected revenue with different growth rates.



The above figures show that Pension expense remains within 8% of Revenue if it (i.e. Revenue) grows at the rate of 12% per annum. It goes up to 12% and 16% of Revenue if it grows at 10% and 8% per annum respectively.

In view of existing factors such as:

- revenue crunch,
- priority for spending in other areas,
- relatively low Implicit Pension Debt of Punjab Government, and
- higher priority to fund GP Fund liability,

it would be advisable to build the Pension Fund gradually in the first few (5-10) years and treat it as a buffer in case of:

- any unexpected pension outgoes,
- Government revenue shortfall,
- or to fulfil the need of spending in other areas (i.e. funds as per the objective given in (i) above).

The Government can revisit the objective and consequently come up with some specific long term funding strategy after the initial few years.

Two such examples are given below:

Example 1:

- annual contribution of Rs.5 billion is made to the Pension Fund say from the year 2010-11 to 2014-15 (i.e. the next 5 years); and
- after accumulation period, 5% of Basic Salaries is contributed annually to the Fund;

The table below summarizes the buffer available in each year (Fiscal Space B), provided that the fund is not used to finance the pension expense in previous years (assuming Pension Fund assets of Rs.12 billion on June 30, 2010.

Year	Pension Expense	Contribution to the Fund	Fiscal Space (A)	Fiscal Space (B)
2010 - 11	23.4	5.0	1.4	1.4
2011 - 12	26.6	5.0	2.2	3.6
2012 - 13	30.0	5.0	3.1	6.7
2013 - 14	35.3	5.0	4.0	10.7
2014 - 15	38.5	5.0	5.1	15.8
2015 - 16	46.6	6.9	6.3	22.1
2016 - 17	50.8	7.5	7.9	30.0
2017 - 18	59.4	8.2	9.8	39.8
2018 - 19	67.2	8.9	11.9	51.7
2019 - 20	77.5	9.7	14.4	66.1
2020 - 21	89.4	10.5	17.3	83.4

Fiscal Space (A): if income from fund is used to finance pension expense each year.
Fiscal Space (B): accumulated income from capital injections in any one year, assuming Fiscal Space (A) is not consumed in earlier years.

As can be seen, the Fund creates buffer of Rs. 15.8 billion by year 5 and Rs. 51.7 billion by year 8, which can be utilized to meet pension outgoes in one or a number of years.

Option C in Appendix IX (which details various funding options outlined in earlier communication) gives a specific example of using the buffer (Fiscal Space B) in 6th year and interest earning from the fund are used to finance the pension expense thereon.

Example 2:

- 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 is made to the Pension Fund (i.e. the next 5 years); and
- after accumulation period, 5% of Basic Salaries is contributed annually to the Fund;

The table below summarizes the buffer available in each year (Fiscal Space B), provided that the fund is not used to finance the pension expense in previous years (assuming Pension Fund assets of Rs. 12 billion as June 30, 2010).

Year	Pension Expense	Contribution to the Fund	Fiscal Space (A)	Fiscal Space (B)
2010 - 11	23.4	2.0	1.4	1.4
2011 - 12	26.6	2.0	1.9	3.3
2012 - 13	30.0	3.0	2.3	5.6
2013 - 14	35.3	3.0	3.0	8.6
2014 - 15	38.5	4.0	3.7	12.3
2015 - 16	46.6	6.9	4.6	16.9
2016 - 17	50.8	7.5	6.0	22.9
2017 - 18	59.4	8.2	7.6	30.5
2018 - 19	67.2	8.9	9.5	40.0
2019 - 20	77.5	9.7	11.7	51.7
2020 - 21	89.4	10.5	14.2	65.9

Fiscal Space (A): if income from fund is used to finance pension expense each year.
Fiscal Space (B): accumulated income from capital injections in any one year, assuming Fiscal Space (A) is not consumed in earlier years.

In view of the lower contributions, this approach creates lesser fiscal space. As can be seen, the Fund creates buffer of Rs. 12.3 billion by year 5 and Rs. 40.0 billion by year 8, which can be utilized to meet pension outgoes in one or a number of years.

Option D in Appendix IX of the document gives a specific example of using the buffer (Fiscal Space B) in 6th year and interest earning from the fund are used to finance the pension expense thereon.

3.4 Optimal Funding Strategy for Pension Benefits and GP Fund

Keeping in view:

- any expected and unexpected jumps in pension benefit payouts due to various economic (such as inflation) and demographic factors (such as early retirements resulting high cash outgoes due to commutation),
- relatively low share of future public resources committed to pension expenditure, i.e. the IPD, and relatively lower growth on real basis,
- the estimated GP Fund liability of **Rs.89.8 billion** as at 30th June 2010, all of which constitutes of contributions fully made by employees and interest thereon, and
- current revenue constraints of the Government and high priorities for other areas such development projects, law and order etc.

It may be prudent to start funding of both employee benefit schemes at the same time with higher priority attached to GP Fund with relatively low contributions for financing accrued GP Fund liability and meeting pension expenses in the first few years.

A couple of suggested funding options are provided in Appendix IX as Option C and D. This strategy will help Government of Punjab building-up:

a. reasonable Pension Fund assets during next 5-10 years so that it can graduate pension benefit payments from the fiscal budget by smoothing its percentage portion of revenue by paying any expected and unexpected jumps in pension payouts through the Pension Fund earnings, and/or creating fiscal space to meet partial pension outgo, if needed,

b. GP Fund for future benefit accrual and funding past liability

Thus, it may be advisable that in 2010-11, the funding of Rs.9.6 billion be split by apportioning Rs.7.6 billion towards GP Fund and remaining Rs.2.0 billion to Pension Fund and thereafter the allocation to Pension Fund is increased gradually.

It is considered by Finance Department of GoPb that Option D provides the optimal funding approach.

The following table illustrates the total contributions in each GP and Pension Fund for the next 30 years using a combination of GPF funding and Option D for Pension Fund as described above.

Year	Annual Regular Contribution deducted from Salaries	Past GP Fund Liability Amortization Instalment	Total Amount of Pension Fund Contribution (Option D)	Total Contribution
2010 - 11	5.6	2.0	2.0	9.6
2011 - 12	6.2	3.0	3.0	12.2
2012 - 13	6.8	3.0	3.0	12.8
2013 - 14	7.5	4.0	4.0	15.5
2014 - 15	8.3	5.0	5.7	19.0
2015 - 16	9.2	6.1	6.3	21.6
2016 - 17	10.1	7.3	6.9	24.3
2017 - 18	11.1	8.5	7.5	27.1
2018 - 19	12.3	9.7	8.2	30.2
2023 - 24	19.3	16.8	12.3	48.4
2028 - 29	28.8	25.5	18.2	72.5
2039 - 40	74.6	69.6	58.2	202.4

This funding approach should be reviewed in future for a longer time horizon.

CHAPTER 4
International Public Sector Accounting Standard 25 for Punjab Government Pension & General Provident Fund Schemes

4.1 Objective

The International Public Sector Accounting Standard 25 (IPSAS 25) prescribes the accounting and disclosures by public sector entities for employee benefits.

The Standard requires an entity to recognize:

- a liability, when an employee has provided service in exchange for employee benefits to be paid in the future; and
- an expense, when the entity consumes the economic benefits or service potential arising from service provided by an employee in exchange for employee benefits.

This chapter presents accounting and disclosures for Punjab Government Pension and General Provident Fund Schemes required as per the Standard.

4.2 Scope

International Public Sector Accounting Standards are applicable on all entities preparing and presenting financial statements under the **accrual basis** of accounting. These entities are therefore necessarily required to comply with IPSAS 25 for all employee benefits (both short term and long term), except share based transactions.

Punjab Government Pension Scheme

The Punjab Government Pension Scheme is a defined benefit scheme since the pension benefits are formula based. The final pension benefit is calculated on the last drawn salary and service rendered by the employee. The benefit under this scheme thus falls

under the "post-employment benefits – defined benefit plans" definition/provision given in the Standard.

The reporting and disclosures of the scheme have been prepared as per the relevant paragraphs and provisions of IPSAS 25.

General Provident Fund (GPF) Scheme

The Punjab Government Provident Fund (GPF) Scheme is a contributory scheme where the employees are the sole contributors towards their GPF notional accounts. The contributions are deducted by the Government from employees' salaries, using subscription rates which are dependant on the pay scales of employees. The GPF notional accounts thus created are credited with interest income based on interest rates announced by the Government on an annual basis. The account balances are paid to employees at the time of cessation of their service. The monies collected through employee contributions are utilized to meet other provincial expenditures rather than being added to a separate Fund.

For the GPF Scheme, the Punjab Government does not provide a benefit to the employees either by contributing towards the notional accounts or at the time of final settlement of benefit. As such, the money paid to the employees at the end of service is merely the payment of loan or debt based on the announced interest rates for various years.

As per the:

- definitions given in **paragraph 10** of the Standard, Employee Benefits are all forms of consideration given by an entity in exchange for service rendered by employees;
- introduction note **IN1** of the Standard, benefits that are not consideration in exchange for service rendered by employees or past employees of reporting entities are not within the scope of this Standard; and

- **paragraph 28** of the Standard, for a post retirement benefit plan to be classified as a defined contribution plan, the entity must pay fixed contributions into a **separate entity**.

Keeping in view the above paragraphs of IPSAS-25 and the nature of the Punjab Government General Provident Fund Scheme explained above, it is interpreted that reporting of this scheme does not fall under this Standard.

Moreover, for a defined contribution plan, employer contribution is considered as expense for the period (paragraph 57. of the Standard). In case of GPF, there is no expense of Government of Punjab and consequently, there will be no liability as per the Standard.

In view of the above restrictions given in the Standard, this chapter provides the best possible disclosures for the year 2008-09 that can be reflected by Government of Punjab in respect of GPF Scheme, if it is considered as a defined benefit plan (i.e. not a defined contribution plan).

4.3 Definitions, Assumptions & Methodology

Based on the provisions of IPSAS 25, definitions of various terms used in this chapter, assumptions derived and valuation methodology adopted are as follows:

4.3.1 Definitions

Present Value of Defined Benefit Obligation

The present value of a defined benefit obligation is the present value, without deducting any plan assets, of expected future payments required to settle the obligation resulting from employee service in the current and prior periods.

Current Service Cost

Current service cost is the increase in present value of defined benefit obligation resulting from employee service in the current period.

Defined Benefit Plans

Defined benefit plans are post-employment benefit plans other than defined contribution plans.

Defined Contribution Plans

Defined contribution plans are post-employment benefit plans under which an entity pays fixed contributions into a separate entity (a fund) and will have no legal or constructive obligation to pay further contributions if the fund does not hold sufficient assets to pay all employee benefits relating to employee service in the current and prior periods.

Employee Benefits

Employee benefits are all forms of consideration given by an entity in exchange for service rendered by employees.

Interest Cost

Interest cost is the increase during a period in the present value of a defined benefit obligation which arises because the benefits are one period closer to settlement.

Plan Assets

Plan assets comprise:

- Assets held by a long-term employee benefit fund; and
- Qualifying insurance policies.

Return on Plan Assets

The return on plan assets is interest, dividends and other revenue derived from the plan assets, together with realized and unrealized gains or losses on the plan assets, less any costs of administering the plan and less any tax payable by the plan itself.

Post-employment Benefits

Post-employment benefits are employee benefits (other than termination benefits) which are payable after the completion of employment.

Post-employment Benefit Plan

Post-employment benefit plans are formal or informal arrangements under which an entity provides post-employment benefits for one or more employees.

Vested/Non-Vested Past Service Cost

Past service cost is the increase in the present value of defined benefit obligation for employee service in prior periods, resulting in the current period from the introduction of, or changes to, post-employment benefits or other long-term employee benefits. Past service cost may be either positive or negative.

Vested employee benefits are employee benefits that are not conditional on future employment.

Paragraph 113 states that

"Past service cost arises when an entity introduces a defined benefit plan or changes the benefits payable under an existing defined benefit plan. Such changes are in return for employee service over the period until the benefits concerned are vested. Therefore, past service cost is recognized over that period, regardless of the fact that the cost refers to employee service in previous periods."

Paragraph 112 states that

"In measuring its defined benefit liability, an entity shall recognize past service cost as an expense on a straight-line basis over the average period until the benefits become vested. To the extent that the benefits are already vested immediately following the introduction of, or changes to, a defined benefit plan, an entity shall recognize past service cost immediately."

Under the Punjab Government Pension Scheme, benefits become vested after completing 25 years of service. The liability of pensioners is a vested liability.

However, the employees are not required to render more service at any point of time to become entitled to GPF benefit. Therefore, there is no service requirement for vesting of GPF benefit and consequently all GPF liability is vested.

Non-vested Past Service Cost (paragraphs 112-117) as at the date of first time of adoption has been determined assuming that the pension benefit has been introduced as at 01.07.2008 and amortized over the remaining period to vesting calculated as at 01.07.2008.

The average remaining years to vesting of employees with less than 25 years of service works out to ***16 years*** *for the Government of Punjab. Thus, the non-vested benefit obligation calculated as at adoption of IPSAS-25 (i.e. 01.07.2008) is spread equally over a period of 16 years.*

4.3.2 Assumptions

Assumptions used for Punjab Government Pension Scheme

- Discount Rate

  According to paragraph 91 of the Standard, discount rate shall reflect the time value of money. The currency and term of the financial instrument selected to reflect the time value of money shall be consistent with the currency and estimated term of the post-employment benefit obligations.

  The discount rate is determined by reference to market yields (at the balance sheet date) on long-term government bonds. The term of the assumed yield of such bonds is approximately consistent with the estimated term of the post-employment benefit obligations. The rate on 20-years PIB's have been taken as benchmark and consequently the discount rate assumption is 12%.

- Rate of Increase in Pensionable Salary

  According to paragraphs 96-97, an estimate of future salary increases should take account of inflation, seniority, promotion and other relevant factors, such as supply and demand in the employment market. It had been assumed that pensionable salaries would increase at 11% per annum in future.

  It may be stated that the assumption regarding the discount rate and the rate of increase in pensionable pay are intimately connected. During periods of inflation, both tend to rise in conformity with each other. From an actuarial costing point of view, it is the difference between these two rates (i.e. discount rate and pensionable pay increase) that matters, and not their individual values in isolation. Thus a difference of 1% between the discount rate (i.e. 12%) and the rate of increase in Pensionable Salary (i.e. 11%) has been considered appropriate. This 1% difference is within the locally and internationally recognised norms.

- Pension Indexation

  The indexation of pension has been assumed as the rate of 8% per annum. This was based upon past history of indexation provided by the government from time to time and future expectations based upon increased inflation expectation.

- Expected Mortality Experience

  It had been assumed that the mortality of active employees and pensioners will be according to LIC 96-98a Mortality Table. (Mortality Table is given in Appendix-V of the Report).

- Expected rates of Withdrawal/Ill-health/Retirement

  The Employee Turnover, Disability rates used in the valuation were based on the experience of public-sector employee benefit schemes in Pakistan in conjunction with the pensioners' information provided (The table showing these rates is given in Appendix-V of the Report).

It has been assumed that there will be no early retirements. This assumption has been based upon the recent experience of Punjab Government employees with regards to early retirements. Reasons have been explained in detail in the earlier section of the report under "Assumptions" section of "Pension Scheme" chapter.

- Fair Value of Plan Assets

Fair Value of Plan Assets has been determined according to paragraphs 118-120 of the Standard.

Paragraph 118 states:

"The fair value of any plan assets is deducted in determining the amount recognized in the statement of financial position under paragraph 65. When no market price is available, the fair value of plan assets is estimated; for example, by discounting expected future cash flows using a discount rate that reflects both the risk associated with the plan assets and the maturity or expected disposal date of those assets (or, if they have no maturity, the expected period until the settlement of the related obligation)."

Paragraph 119 states:

"Plan assets exclude unpaid contributions due from the reporting entity to the fund, as well as any non-transferable financial instruments issued by the entity and held by the fund. Plan assets are reduced by any liabilities of the fund that do not relate to employee benefits, for example, trade and other payables and liabilities resulting from derivative financial instruments."

All assets of the Pension Fund are currently invested in Bank of Punjab Deposit Scheme. Its Fair Value has been taken as the amount of investment i.e. Rs.3.0 billion.

- Expected Return on Plan Assets

  Paragraph 126 states that:

  "The expected return on plan assets is based on market expectations, at the beginning of the period, for returns over the entire life of the related obligation. The expected return on plan assets reflects changes in the fair value of plan assets held during the period as a result of actual contributions paid into the fund and actual benefits paid out of the fund."

  Keeping in view the market expectations of the existing and available instruments for the investment of Punjab Government Pension Fund assets as at the beginning of the reporting period (i.e. July 1st 2008), it has been assumed that the expected return on plan assets would be 12% per annum (which is same as discount rate).

- First Time Adoption of the Standard

  It has been assumed that the year of first time adoption of this Standard would be 2008-09. Therefore, the date of first time adoption has been considered as 01.07.2008 (i.e. beginning of the fiscal year). The accounting and disclosures for the year 2008-09 have been prepared as per the requirements/provisions of the Standard. The Standard exempts a number of required disclosures in the first year of adoption of the standard (these disclosures are generally comparisons related to past years).

- Actuarial Gains and Losses

  Actuarial gains & losses can occur on account of:

  - Actual experience being different than assumed; and/or
  - Effects of changes in actuarial assumptions.

The standard prescribes a minimum basis to recognize a portion of this gain or loss into the annual cost. The minimum amount is determined by calculating the greater of 10% of present value of defined benefit obligation OR 10% of fair value of plan assets & dividing it by future working lifetime of employees.

However, an entity can opt for a faster recognition if it so desires. In this case, the recognition policy has to be applied consistently from period to period.

Since the Standard is being adopted for the first time in 2008-09, the credit/charge for gains or losses will apply from the year 2009-10 onwards. For Punjab Government Pension Scheme, the minimum recognition approach (as specified by the Standard) will be adopted.

- Average Remaining Working Lifetime of Active Employees

The average remaining working lifetime of all employees (i.e. vested & non-vested) is determined as follows:

- The expected remaining lifetime of each employee (in the sample) is determined after taking into account his/her possibility of leaving service due to retirement, death or invalid retirement.
- The average of remaining working lifetime of all employees is then determined to calculate the average remaining working lifetime of the group of employees.

The average remaining working lifetime of employees of Government of Punjab works out to 17 years as at 30.06.2009

Assumptions used for Punjab Government General Provident Fund Scheme

- Interest Cost

  Interest cost on the accumulated GPF account balances as at July 1st 2008 for the year 2008-09 has been assumed at the rate of 12%.

- First Time Adoption of the Standard

  It has been assumed that the year of first time adoption of this Standard would be 2008-09. Therefore, the date of first time adoption has been considered as 01.07.2008 (i.e. beginning of the fiscal year). The accounting and disclosures for the year 2008-09 have been prepared accordingly.

- Actuarial Gains and Losses

  Owing to the nature of the GPF Scheme, no actuarial gains and losses arise for this employee benefit scheme.

4.3.3 Methodology

Actuarial Valuation Method used for Pension Scheme

Projected Unit Credit (PUC) Actuarial Cost Method was used for calculating the Present Value of Defined Benefit Obligation and Current Service Cost for the Pension Scheme. This method is mandated under IPSAS-25 under paragraph 77 of the Standard which states:

"An entity shall use the Projected Unit Credit Method to determine the present value of its defined benefit obligations and the related current service cost and, where applicable, past service cost."

4.4 Reporting of Punjab Government Pension Scheme as per IPSAS 25

4.4.1 First Time Adoption of IPSAS 25 for Punjab Government Pension Scheme under Paragraph 166.

Initial Liability as at 1st July 2008 under Paragraph 166.

	Rupees in '000
Present Value of Defined Benefit Obligations as at 1st July 2008	515,406,161
Less Fair Value of Plan Assets	(3,000,000)
Less any Past Service Cost to be recognised in later periods	(156,834,521)
Initial Liability as at 1st July 2008	**355,571,640**
Liability recognised as at 01.07.2008 under the entity's previous accounting policy	Nil
Increase in Liability due to first time adoption of IPSAS 25	**355,571,640***

* Paragraph 167 states:

If the initial liability determined in accordance with paragraph 166 is more or less than the liability that would have been recognized at the same date under the entity's previous accounting policy, the entity shall recognize that increase/decrease in opening accumulated surpluses or deficits.

4.4.2 Statement of Financial Position for Punjab Government Pension Scheme under Paragraph 65. of IPSAS 25

Statement of Financial Position as at 30th June 2009

	Rupees in '000
Present Value of Defined Benefit Obligation	597,622,375
Plus Actuarial Gains/**Less** Actuarial Losses not yet recognised	(14,208,481)
Minus Past Service Cost not yet recognised	(147,032,363)
Less unrecognised Transitional Liability to be recognised in later periods	Nil
Minus fair value of Plan Assets	(3,000,000)
Statement of Financial Position as at 30th June 2009	**433,381,531**

4.4.3 Statement of Financial Performance for Punjab Government Pension Scheme under Paragraph 74 of IPSAS 25

Expense Recognized in the Statement of Financial Performance for 2008-09

	Rupees in '000
Current Service Cost	25,173,434
Interest Cost	61,848,739
Expected Return on Plan Assets	(360,000)
Actuarial Gains and Losses	Nil
Past Service Cost*	9,802,158
Total Expense Recognized in the Statement of Financial Performance	**96,464,331**

* The past service cost recognized as expense is calculated as per paragraph 112. of the Standard which mandates to recognize (non-vested) past service cost as an expense on a straight-line basis over the average period until the benefits become vested. The average remaining years to vesting worked out as at July 1st 2008 is 16 years. Thus the amount of past service cost recognized as expense during 2008-09 is calculated by dividing the non-vested past service cost of Rs.156.834 billion by the average years to vesting of 16 years.

4.4.4 Disclosures for Punjab Government Pension Scheme under Paragraph 141. of IPSAS 25

Various disclosures required under paragraph 141. of the Standard, apart from Statement of Financial Position & Statement of Financial Performance, are presented as follows:

Accounting Policy for Recognizing Actuarial Gains & Losses [141.(a)]

As stated earlier, we have assumed that Government of Punjab will adopt the minimum 10% corridor approach for the recognition of actuarial gains and losses in respect of its Pension Scheme. Since there are no accumulated actuarial gains and losses at the end of previous financial year (i.e. uptil 30.06.2008), therefore, no portion of actuarial gains losses has been recognized during 2008-09.

General Description of the Type of the Plan [141.(b)]

Punjab Government Pension Scheme is a defined benefit scheme based on pension calculation formula comprising of pension accrual rate related to service rendered and last drawn pensionable salary. The benefit structure of the Scheme is described in Appendix VI of the Report.

Reconciliation of Present Value of Defined Benefit Obligation [141.(c)]

	Rupees in '000
Present Value of Defined Benefit Obligation as at 1st July 2008	515,406,161
Current Service Cost	25,173,434
Interest Cost*	61,848,739
Benefits paid	(18,654,440)
Actuarial gains and losses	13,848,481
Present Value of Defined Benefit Obligation as at 30th June 2009	**597,622,375**

* According to paragraph 95. of the Standard, interest cost is computed by multiplying the discount rate as determined at the start of the period (which is 12%) with the present value of the defined benefit obligation throughout that period, taking account of any material changes in the obligation. {0.12 x Rs.515,406,161,000}

Reconciliation of Fair Value of Plan Assets [141.(e)]

	Rupees in '000
Fair Value of Plan Assets as at 1st July 2008	3,000,000
Contributions by the employer	Nil
Expected return on plan assets*	360,000
Benefits paid	Nil
Actuarial gains and losses	(360,000)
Fair value of plan assets as at 30th June 2009	**3,000,000**

* Expected return on plan assets is obtained by multiplying expected return on plan assets (which is 12% for 2008-09) with the fair value of plan assets as at the beginning of the reporting period. {0.12 x Rs.3,000,000,000}

Reconciliation of Actuarial Gains and Losses

	Rupees in '000
Unrecognised Actuarial Gains/(Losses) as at 1st July 2008	Nil
Actuarial Gains/(Losses) arising during the year	(14,208,481)
Actuarial (Gains)/Losses recognized in the Statement of Financial Performance during the year	Nil
Unrecognised Actuarial Gains/(Losses) as at 30th June 2009	**(14,208,481)**

Category of Plan Assets [141.(j)]

	Rupees in '000
Cash at Bank	3,000,000

Actual Return on Plan Assets [141.(m)]

	Rupees in '000
Expected Return on Plan Assets for the year	360,000
Actuarial gain/ (loss) on assets in the year	(360,000)
Actual Return on Plan Assets	**Nil**

Principal Actuarial Assumptions used as at 30th June 2009 [141.(n)]

Discount rate	12% per annum
Basis on which discount rate has been determined	Explained above under Section 4.3
Expected rates of salary increase	11% per annum
Expected rates of return on plan assets	12% per annum
Average remaining years to vesting	16 years
Average remaining working lifetime	17 years
Rate of Increase in Pension amounts (Indexation rate)	8% per annum

Surplus (Deficit) in the Plan [141.(p)(i)]

	Rupees in '000	Rupees in '000
	2009	2008
Present Value of Defined Benefit Obligation as at June 30th of the year	597,622,375	515,406,161
Fair Value of Plan Assets at year end	3,000,000	3,000,000
Surplus/ (Deficit) in the Plan	**(594,622,375)**	**(512,406,161)**

Experience Adjustments [141.(p)(ii)]

	Rupees in '000
Experience adjustment arising on plan liabilities (gains)/losses	13,848,481
Experience adjustment arising on plan assets (gain)/losses	360,000
Total Experience adjustment (i.e. total actuarial loss)	**14,208,481**

Estimated Contribution to be paid to the Plan during 2009-10 [141.(q)]

	Rupees in '000
Estimated Contribution to be paid by the Government of Punjab to its Pension Fund	9,000,000

Corroboration of Results

	Rupees in '000
Statement of Financial Position as at 30th June 2008	Nil
Total Expense Recognized in the Statement of Financial Performance	96,464,331
Benefit Payments made during the Year	(18,654,440)
Initial Liability charged to opening accumulated Surpluses/Deficits due to First Time Adoption of IPSAS 25	355,571,640
Statement of Financial Position as at 30th June 2009	**433,381,531**

4.5 Reporting of Punjab Government General Provident Scheme as per IPSAS 25

4.5.1 First Time Adoption of IPSAS 25 for Punjab Government General Provident Fund Scheme under Paragraph 166.

Initial Liability as at 1st July 2008 under Paragraph 166.

	Rupees in '000
Present Value of Defined Benefit Obligations as at 1st July 2008 (GP Fund Loan Balance on GOPB as at 01.07.2008)	69,275,369
Less Fair Value of Plan Assets	Nil
Less any Past Service Cost to be recognised in later periods	Nil
Initial Liability as at 1st July 2008	**69,275,369**
Liability recognised as at 01.07.2008 under the entity's previous accounting policy	Nil
Increase in Liability due to first time adoption of IPSAS 25	**69,275,369**

4.5.2 Statement of Financial Position for Punjab Government General Provident Fund Scheme under Paragraph 65. of IPSAS 25

Statement of Financial Position as at 30th June 2009

	Rupees in '000
Present Value of Defined Benefit Obligation (GP Fund Loan Balance on GOPB as at 30.06.2009)	79,185,192
Plus Actuarial Gains/**Less** Actuarial Losses not yet recognised	Nil
Minus Past Service Cost not yet recognised	Nil
Less unrecognised Transitional Liability to be recognised in later periods	Nil
Minus fair value of Plan Assets	Nil
Statement of Financial Position as at 30th June 2009	**79,185,192**

4.5.3 Statement of Financial Performance for Punjab Government General Provident Fund Scheme under Paragraph 74. of IPSAS 25

Expense Recognized in the Statement of Financial Performance for 2008-09

	Rupees in '000
Current Service Cost	Nil
Interest Cost*	8,615,641
Expected Return on Plan Assets	Nil
Total Expense Recognized in the Statement of Financial Performance	**8,615,641**

*Interest Credited by the Government during the period has been assumed at the rate of 12%.

4.5.4 Disclosures for Punjab Government General Provident Fund Scheme under Paragraph 141. of IPSAS 25

Various disclosures required under paragraph 141. of the Standard, apart from Statement of Financial Position & Statement of Financial Performance, are presented as follows:

Accounting Policy for Recognizing Actuarial Gains & Losses [141.(a)]

No actuarial technique is involved in determining the GPF balances. Interest cost is the amount credited by the Government during the period. There is no current service cost because Government does not contribute to the GP Fund. Thus, no actuarial gains and losses arise for the underlying GP Fund Scheme.

General Description of the Type of the Plan [141.(b)]

In GP Fund Scheme, employees are the sole contributors to their account balances according to their subscription rate which are based on pay scales of the employees. The Government deducts their contributions from salaries and utilizes the amounts in meeting its expenditures rather than contributing it to a separate Fund. It maintains a book entry for contribution by employees which is credited with an interest rate announced by the Government on an annual basis. The account balances are paid to employees at the time of cessation of their service.

The vesting period for GPF Scheme is NIL since the employee does not have to render more service for being entitled to the GPF benefit.

Reconciliation of Present Value of Defined Benefit Obligation [141.(c)]

	Rupees in '000
Present Value of Defined Benefit Obligations as at 1st July 2008 (GP Fund Loan Balance on GOPB as at 01.07.2008)	69,275,369
Interest Cost	8,615,641
Benefits paid	(3,749,092)
Employees' contribution deducted during the period	5,043,274
Present Value of Defined Benefit Obligation as at 30th June 2009 (GP Fund Loan Balance on GOPB as at 30.06.2009)	**79,185,192**

Reconciliation of Fair Value of Plan Assets [141.(e)]

	Rupees in '000
Fair Value of Plan Assets as at 1st July 2008	Nil
Contributions by the employer	Nil
Expected return on plan assets	Nil
Benefits paid	Nil
Fair value of plan assets as at 30th June 2009	**Nil**

Actual Return on Plan Assets [141.(m)]

	Rupees in '000
Expected Return on Plan Assets for the year	Nil
Actuarial gain/ (loss) on assets in the year	Nil
Actual Return on Plan Assets	**Nil**

Principal Actuarial Assumptions used as at 30th June 2009 [141.(n)]

Discount rate	Nil
Basis on which discount rate has been determined	Nil
Expected rates of salary increase	Nil
Expected rates of return on plan assets	Nil
Average remaining years to vesting	Nil
Average remaining working lifetime	17 years

Surplus (Deficit) in the Plan [141.(p)(i)]

	Rupees in '000	Rupees in '000
	2009	2008
Present Value of Defined Benefit Obligation as at June 30th of the year	79,185,192	69,275,369
Fair Value of Plan Assets at year end	Nil	Nil
Surplus/ (Deficit) in the Plan	(79,185,192)	(69,275,369)

Experience Adjustments [141.(p)(ii)]

	Rupees in '000
Experience adjustment arising on plan liabilities (gains)/losses	Nil
Experience adjustment arising on plan assets (gain)/losses	Nil

Estimated Contribution to be paid to the Plan during 2009-10 [141.(q)]

	Rupees in '000
Estimated Contribution to be paid by the Government of Punjab to its Pension Fund	Nil

Corroboration of Results

	Rupees in '000
Statement of Financial Position as at 30th June 2008	Nil
Total Expense Recognized in the Statement of Financial Performance	8,615,641
Benefit Payments made during the Year	(3,749,092)
Contributions deducted from employees during the year	5,043,274
Initial Liability charged to opening accumulated Surpluses/Deficits due to First Time Adoption of IPSAS 25	69,275,369
Statement of Financial Position as at 30th June 2009	**79,185,192**

4.6 Commentary on IPSAS 25 Application to Government of Punjab Pension and GP Fund Schemes

1. IPSAS 25 is applicable to all public sector employee benefits and is being applied to Punjab Govt. Pension and GP Fund Schemes for the first time in the year 2008-09.

2. It is debatable whether IPSAS 25 is applicable to GP Fund Scheme since this does not constitute an employee benefit as defined in the Standard.

3. The Standard prescribes the accounting and disclosure requirements of public sector employee benefit schemes. However, it gives exemptions to some disclosures in the year of adoption.

4. Considering that this is a new concept for the Government, its usefulness will start to emerge gradually over the future.

5. The reconciliations of various items (such as present value of defined benefit pension obligations, fair value of Plan assets etc.) will emerge as powerful tools for the Govt. in understanding the liabilities and assets of the Schemes AND various components of each item.

6. Additionally, the emergence and movement of gains and losses for Pension Scheme will make the Govt. focus on the areas which impact the Scheme's health negatively or positively.

7. It is important to differentiate the accrued (or funding) pension liability from IPSAS 25 liability.

One key difference is that IPSAS 25 spreads non-vested liability over the average period to vesting. As such, while the accrued (or funding) liability of Punjab Govt. Pension Scheme is Rs.515.4 billion on 01.07.08, the initial liability as per IPSAS 25 is Rs.355.6 billion on the same date (assuming the Pension Scheme is introduced as at the date of adoption of the Standard).

Another important difference is accrued pension liability recognizes 100% of actuarial gains and losses whereas the minimum approach under IPSAS 25 recognizes a relatively small portion. The effect of this difference will start to appear from the year 2009-10 onwards.

8. The Standard requires calculation of following 2 parameters :

   i. Statement of Financial Position; and
   ii. Statement of Financial Performance.

   These act as useful benchmarks for comparison of assets vs. liabilities AND scheme cost vs. contributions during the accounting period.

9. The Standard requires narrative description of the basis used to determine the overall expected return on assets.

   This has not been done for 2008-09 as all assets are invested with Bank of Punjab and are relatively nominal in amount. An expected return on assets of 12% has been assumed.

NAUMAN A. CHEEMA
Actuary
Fellow of Society of Actuaries (USA)
Fellow of Pakistan Society of Actuaries

APPENDIX I

Summary of Sample of Active Employees of Government of Punjab
Age-wise Distribution

Age	Total Number	Total Monthly Salary	Avg. Monthly Salary	Avg. PS	Distribution
18	2	6,840	3,420	0.7	0.0%
19	32	110,060	3,439	1.1	0.1%
20	185	665,180	3,596	1.4	0.3%
21	524	1,927,255	3,678	1.8	0.9%
22	990	3,783,590	3,822	2.4	1.7%
23	1,378	5,472,195	3,971	2.6	2.3%
24	1,854	7,743,665	4,177	2.8	3.1%
25	2,204	9,482,650	4,302	3.0	3.7%
26	2,542	11,133,705	4,380	3.3	4.3%
27	2,396	10,704,125	4,467	3.6	4.0%
28	1,593	7,055,505	4,429	4.9	2.7%
29	1,440	6,964,855	4,837	5.9	2.4%
30	1,349	6,511,055	4,827	7.0	2.3%
31	1,345	6,830,340	5,078	7.9	2.3%
32	1,364	7,337,100	5,379	9.0	2.3%
33	1,477	8,063,000	5,459	9.9	2.5%
34	1,580	9,274,465	5,870	10.7	2.6%
35	1,679	10,581,110	6,302	11.9	2.8%
36	1,768	11,586,905	6,554	12.3	3.0%
37	2,021	14,114,858	6,984	13.4	3.4%
38	2,013	14,927,340	7,415	15.3	3.4%
39	2,358	18,067,215	7,662	15.7	3.9%
40	2,650	21,575,100	8,142	16.3	4.4%
41	2,508	20,755,269	8,276	17.3	4.2%
42	2,382	20,949,102	8,795	17.7	4.0%
43	2,433	22,042,915	9,060	18.4	4.1%
44	2,184	20,976,145	9,604	19.1	3.7%
45	1,824	18,270,298	10,017	19.8	3.1%
46	1,799	19,335,505	10,748	20.7	3.0%
47	1,546	17,346,730	11,220	21.2	2.6%
48	1,409	16,920,975	12,009	21.7	2.4%
49	1,250	15,690,515	12,552	22.3	2.1%
50	1,149	14,455,595	12,581	22.8	1.9%
51	1,083	14,154,325	13,070	24.9	1.8%
52	907	12,261,050	13,518	26.2	1.5%
53	926	13,498,243	14,577	26.7	1.5%
54	703	10,337,280	14,705	26.9	1.2%
55	742	11,310,120	15,243	28.0	1.2%
56	570	9,244,920	16,219	28.6	1.0%
57	503	8,698,605	17,293	29.3	0.8%
58	426	7,744,945	18,181	30.6	0.7%
59	391	7,936,335	20,298	32.0	0.7%
60	290	6,202,530	21,388	32.7	0.5%

Grade-wise Distribution

Grade	Number in Grade	Total Monthly Salary	Avg. Monthly Salary	Avg. AGE	PS	Distribution
1	318	1,037,952	3,264	29	5	0.5%
2	6,622	30,030,770	4,535	39	15	11.1%
3	1,204	6,411,300	5,325	44	19	2.0%
4	637	3,274,817	5,141	39	14	1.1%
5	23,444	119,118,964	5,081	33	10	39.2%
6	808	5,450,768	6,746	43	19	1.4%
7	6,722	45,440,720	6,760	40	16	11.2%
8	307	2,420,695	7,885	45	20	0.5%
9	3,780	29,518,020	7,809	41	18	6.3%
10	490	4,908,820	10,018	49	26	0.8%
11	534	4,683,180	8,770	43	19	0.9%
12	779	6,769,510	8,690	39	15	1.3%
13	88	832,040	9,455	41	17	0.1%
14	5,129	43,242,599	8,431	36	12	8.6%
15	761	9,527,720	12,520	44	20	1.3%
16	2,383	31,836,880	13,360	45	21	4.0%
17	3,100	59,501,400	19,194	45	18	5.2%
18	1,733	45,681,880	26,360	49	22	2.9%
19	673	22,116,126	32,862	52	26	1.1%
20	218	8,398,886	38,527	54	26	0.4%
21	36	1,673,352	46,482	56	28	0.1%
22	3	162,441	54,147	60	32	0.0%

Consolidated Data used for Valuation

Age	Total Number	Distribution	Total Monthly (Adjusted) Salary	Avg. Monthly (Adjusted) Salary	Avg. PS	Final Total Number	Final Total Monthly Salary
18	2	0.0%	7,114	3,557	0.7	28	99,596
19	32	0.1%	114,462	3,577	1.1	445	1,591,765
20	185	0.3%	691,787	3,739	1.4	2,573	9,620,447
21	524	0.9%	2,004,345	3,825	1.8	7,287	27,872,775
22	990	1.7%	3,934,934	3,975	2.4	13,768	54,727,800
23	1378	2.3%	5,691,083	4,130	2.6	19,163	79,143,190
24	1854	3.1%	8,053,412	4,344	2.8	25,783	112,001,352
25	2204	3.7%	9,861,956	4,475	3.0	30,650	137,158,750
26	2542	4.3%	11,579,053	4,555	3.3	35,351	161,023,805
27	2396	4.0%	11,132,290	4,646	3.6	33,320	154,804,720
28	1593	2.7%	7,337,725	4,606	4.9	22,153	102,036,718
29	1440	2.4%	7,243,449	5,030	5.9	20,026	100,730,780
30	1349	2.3%	6,771,497	5,020	7.0	18,760	94,175,200
31	1345	2.3%	7,103,554	5,281	7.9	18,704	98,775,824
32	1364	2.3%	7,630,584	5,594	9.0	18,969	106,112,586
33	1477	2.5%	8,385,520	5,677	9.9	20,540	116,605,580
34	1580	2.6%	9,645,444	6,105	10.7	21,972	134,139,060
35	1679	2.8%	11,004,354	6,554	11.9	23,349	153,029,346
36	1768	3.0%	12,050,381	6,816	12.3	24,587	167,584,992
37	2021	3.4%	14,679,452	7,263	13.4	28,105	204,126,615
38	2013	3.4%	15,524,434	7,712	15.3	27,994	215,889,728
39	2358	3.9%	18,789,904	7,969	15.7	32,792	261,319,448
40	2650	4.4%	22,438,104	8,467	16.3	36,853	312,034,351
41	2508	4.2%	21,585,480	8,607	17.3	34,878	300,194,946
42	2382	4.0%	21,787,066	9,147	17.7	33,126	303,003,522
43	2433	4.1%	22,924,632	9,422	18.4	33,835	318,793,370
44	2184	3.7%	21,815,191	9,989	19.1	30,372	303,385,908
45	1824	3.1%	19,001,110	10,417	19.8	25,366	264,237,622
46	1799	3.0%	20,108,925	11,178	20.7	25,018	279,651,204
47	1546	2.6%	18,040,599	11,669	21.2	21,500	250,883,500
48	1409	2.4%	17,597,814	12,490	21.7	19,594	244,729,060
49	1250	2.1%	16,318,136	13,055	22.3	17,383	226,935,065
50	1149	1.9%	15,033,819	13,084	22.8	15,979	209,069,236
51	1083	1.8%	14,720,498	13,592	24.9	15,061	204,709,112
52	907	1.5%	12,751,492	14,059	26.2	12,613	177,326,167
53	926	1.5%	14,038,173	15,160	26.7	12,878	195,230,480
54	703	1.2%	10,750,771	15,293	26.9	9,776	149,504,368
55	742	1.2%	11,762,525	15,852	28.0	10,319	163,576,788
56	570	1.0%	9,614,717	16,868	28.6	7,927	133,712,636
57	503	0.8%	9,046,549	17,985	29.3	6,995	125,805,075
58	426	0.7%	8,054,743	18,908	30.6	5,924	112,010,992
59	391	0.7%	8,253,788	21,109	32.0	5,437	114,769,633
60	290	0.5%	6,450,631	22,244	32.7	4,033	89,710,052
Total	**59,769**					**831,186**	**6,971,843,164**

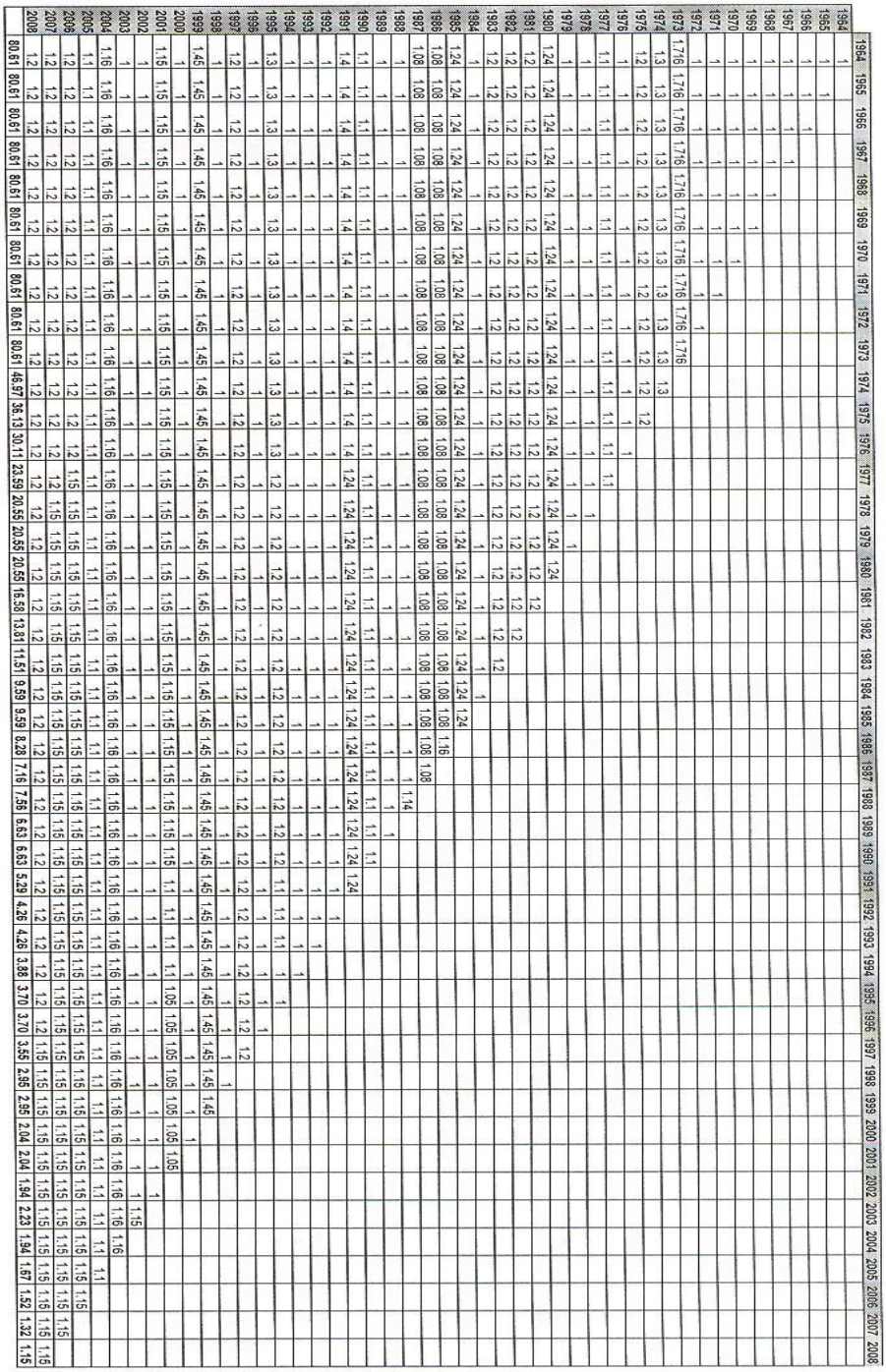
APPENDIX II

SANCTIONED POSTS BREAK-UP FOR 2009-10

BASIC SCALE	PROVINCIAL	DISTRICT	TOTAL
1	61,567	115,727	177,294
2	11,321	42,682	54,003
3	8,949	1,139	10,088
4	5,555	8,429	13,984
5	144,610	28,454	173,064
6	4,983	21,402	26,385
7	34,540	151,017	185,557
8	382	4,460	4,842
9	18,796	119,409	138,205
10	635	7,095	7,730
11	5,661	8,787	14,448
12	3,688	7,735	11,423
13	501	281	782
14	24,910	30,988	55,898
15	1,255	4,727	5,982
16	12,139	41,097	53,236
17	18,951	22,522	41,473
18	10,208	5,767	15,975
19	2,704	2,381	5,085
20	741	169	910
21	82	1	83
22	5	-	5
Special Grade	992	32,202	33,194
Total:	**373,175**	**656,471**	**1,029,646**

APPENDIX III

Indexation



	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
1964	1									1.716	1.3	1.2	1.1	1.1	1	1	1.24	1.2	1.2	1.2	1	1.24	1.08	1.08	1	1	1.1	1.4	1.4	1	1	1.3	1	1	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1965	1	1								1.716	1.3	1.2	1.1	1.1	1	1	1.24	1.2	1.2	1.2	1	1.24	1.08	1.08	1	1	1.1	1.4	1.4	1	1	1.3	1	1	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1966	1	1	1							1.716	1.3	1.2	1.1	1.1	1	1	1.24	1.2	1.2	1.2	1	1.24	1.08	1.08	1	1	1.1	1.4	1.4	1	1	1.3	1	1	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1967	1	1	1	1						1.716	1.3	1.2	1.1	1.1	1	1	1.24	1.2	1.2	1.2	1	1.24	1.08	1.08	1	1	1.1	1.4	1.4	1	1	1.3	1	1	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1968	1	1	1	1	1					1.716	1.3	1.2	1.1	1.1	1	1	1.24	1.2	1.2	1.2	1	1.24	1.08	1.08	1	1	1.1	1.4	1.4	1	1	1.3	1	1	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1969	1	1	1	1	1	1				1.716	1.3	1.2	1.1	1.1	1	1	1.24	1.2	1.2	1.2	1	1.24	1.08	1.08	1	1	1.1	1.4	1.4	1	1	1.3	1	1	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1970	1	1	1	1	1	1	1			1.716	1.3	1.2	1.1	1.1	1	1	1.24	1.2	1.2	1.2	1	1.24	1.08	1.08	1	1	1.1	1.4	1.4	1	1	1.3	1	1	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1971	1	1	1	1	1	1	1	1		1.716	1.3	1.2	1.1	1.1	1	1	1.24	1.2	1.2	1.2	1	1.24	1.08	1.08	1	1	1.1	1.4	1.4	1	1	1.3	1	1	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1972	1	1	1	1	1	1	1	1	1	1.716	1.3	1.2	1.1	1.1	1	1	1.24	1.2	1.2	1.2	1	1.24	1.08	1.08	1	1	1.1	1.4	1.4	1	1	1.3	1	1	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1973	1.716	1.716	1.716	1.716	1.716	1.716	1.716	1.716	1.716	1.716	1.3	1.3	1.1	1.1	1	1	1.24	1.2	1.2	1.2	1	1.24	1.08	1.08	1	1	1.1	1.4	1.4	1	1	1.3	1	1	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1974	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.1	1.1	1	1	1.24	1.2	1.2	1.2	1	1.24	1.08	1.08	1	1	1.1	1.4	1.4	1	1	1.3	1	1	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1975	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1	1	1.24	1.2	1.2	1.2	1	1.24	1.08	1.08	1	1	1.1	1.4	1.4	1	1	1.3	1	1	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1976	1	1	1	1	1	1	1	1	1	1.1	1.1	1.1	1	1	1	1	1.24	1.2	1.2	1.2	1	1.24	1.08	1.08	1	1	1.1	1.4	1.4	1	1	1.3	1	1	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1977	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1	1	1	1.24	1.2	1.2	1.2	1	1.24	1.08	1.08	1	1	1.1	1.4	1.4	1	1	1.3	1	1	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1978	1	1	1	1	1	1	1	1	1	1.1	1.1	1.1	1.1	1.1	1	1	1.24	1.2	1.2	1.2	1	1.24	1.08	1.08	1	1	1.1	1.4	1.4	1	1	1.3	1	1	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1979	1	1	1	1	1	1	1	1	1	1.1	1.1	1.1	1.1	1.1	1	1	1.24	1.2	1.2	1.2	1	1.24	1.08	1.08	1	1	1.1	1.4	1.4	1	1	1.3	1	1	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1980	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.2	1.2	1.2	1	1.24	1.08	1.08	1	1	1.1	1.4	1.4	1	1	1.3	1	1	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1981	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1	1.24	1.08	1.08	1	1	1.1	1.4	1.4	1	1	1.3	1	1	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1982	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1	1.24	1.08	1.08	1	1	1.1	1.4	1.4	1	1	1.3	1	1	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1983	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1	1.24	1.08	1.08	1	1	1.1	1.4	1.4	1	1	1.3	1	1	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1984	1	1	1	1	1	1	1	1	1	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1	1.24	1.08	1.08	1	1	1.1	1.4	1.4	1	1	1.3	1	1	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1985	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.08	1.08	1	1	1.1	1.4	1.4	1	1	1.3	1	1	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1986	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1	1	1.1	1.4	1.4	1	1	1.3	1	1	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1987	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1	1	1.1	1.4	1.4	1	1	1.3	1	1	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1988	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.1	1.4	1.4	1	1	1.3	1	1	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1989	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.1	1.4	1.4	1	1	1.3	1	1	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1990	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.4	1.4	1	1	1.3	1	1	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1991	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.45	1.45	1.15	1.15	1.16	1.1	1.2	1.2	1.2	80.61
1992	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.4	1	1	1.3	1	1	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1993	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.3	1	1	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1994	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.3	1	1	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1995	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1996	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1997	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1998	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
1999	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
2000	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.15	1	1.16	1.1	1.2	1.2	1.2	80.61
2001	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.16	1.1	1.2	1.2	1.2	80.61
2002	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.05	1.05	1.05	1.15	1.1	1.2	1.2	80.61
2003	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.05	1.05	1.05	1.05	1.15	1.1	1.2	80.61
2004	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.2	1.2	1.2	80.61
2005	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	80.61
2006	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	80.61
2007	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	80.61
2008	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	80.61

APPENDIX IV

Age wise Distribution of Pensioners

	Number of Pensioners					Number of Pensioners			
Age	Family	Early Retirement	Invalid Retiree	Normal Retirement	Age	Family	Early Retirement	Invalid Retiree	Normal Retirement
34	34	0	0	0	68	2349	5097	136	6005
35	59	0	0	0	69	2298	5072	144	5436
36	93	0	0	0	70	2341	4181	68	6183
37	68	0	0	0	71	2332	3791	102	4775
38	102	0	0	0	72	2324	4054	68	4631
39	229	0	0	0	73	2553	2341	59	4249
40	322	229	102	0	74	2324	2451	51	3910
41	297	348	136	0	75	2290	1866	76	4877
42	424	416	119	0	76	2290	1645	34	3978
43	585	424	297	0	77	1985	1264	8	2867
44	670	585	382	0	78	1942	1001	34	2655
45	755	687	280	0	79	2052	933	17	2756
46	746	857	441	0	80	2247	916	8	2587
47	721	1001	288	0	81	1840	712	8	1628
48	933	1281	390	0	82	1806	577	0	1170
49	746	1781	331	0	83	1756	628	0	1332
50	950	2731	424	0	84	1866	483	8	1391
51	992	4224	390	0	85	1705	636	0	1272
52	1315	5614	517	0	86	1560	356	0	1128
53	1187	6700	356	0	87	1043	246	0	797
54	1281	7438	509	0	88	1086	119	0	797
55	1103	7149	483	0	89	941	76	0	526
56	1416	7998	466	0	90	712	237	0	93
57	1264	7090	348	0	91	543	93	0	25
58	1382	7438	348	0	92	594	110	0	25
59	1357	6980	305	0	93	560	127	0	8
60	1535	7132	407	1613	94	407	51	0	8
61	1594	7845	322	2434	95	364	42	0	16
62	1654	6988	254	3172	96	433	50	0	0
63	1815	7879	280	5513	97	221	42	0	0
64	1917	8159	356	5436	98	204	0	8	8
65	1874	6598	339	6675	99	178	8	0	8
66	1908	6751	221	7311	100	238	0	0	0
67	2103	5046	93	6123					

APPENDIX V

Mortality Rates

The following table shows the age-based mortality rates used for the purpose of valuation. The rates are those of the LIC96-98a mortality table (Indian Mortality Table) used for actuarial work in Pakistan.

Age	Mortality Rates		Age	Mortality Rates
20	0.919		53	6.058
21	0.961		54	6.730
22	0.999		55	7.401
23	1.033		56	8.069
24	1.063		57	8.710
25	1.090		58	9.397
26	1.113		59	10.130
27	1.132		60	10.907
28	1.147		61	11.721
29	1.159		62	11.750
30	1.166		63	12.120
31	1.170		64	12.833
32	1.170		65	13.889
33	1.171		66	15.286
34	1.201		67	17.026
35	1.246		68	19.109
36	1.308		69	21.534
37	1.387		70	24.301
38	1.482		71	27.410
39	1.593		72	30.862
40	1.721		73	34.656
41	1.865		74	38.793
42	2.053		75	43.272
43	2.247		76	48.093
44	2.418		77	53.257
45	2.602		78	58.763
46	2.832		79	64.611
47	3.110		80	70.802
48	3.438		81	77.335
49	3.816		82	84.210
50	4.243		83	91.428
51	4.719		84	98.988
52	5.386		85	106.891

Note: All rates are per 1000

Turnover, Disability and Early Retirement Rates

The employee turnover, disability and early retirement rates used in the valuation are shown in the table below. The rates are based on the experience of public-sector employee benefit schemes in Pakistan.

Age	Withdrawal Rates	Disability Rates	Early Retirement Rates
20	125.00	-	-
21	85.70	-	-
22	96.80	-	-
23	65.30	-	-
24	44.00	-	-
25	29.70	-	-
26	47.90	-	-
27	31.10	-	-
28	20.40	-	-
29	13.50	-	-
30	9.00	0.50	-
31	6.00	0.55	-
32	15.00	0.59	-
33	9.40	0.64	-
34	6.00	0.69	-
35	3.90	0.74	-
36	2.60	0.78	-
37	1.70	0.83	-
38	7.30	0.88	-
39	4.50	0.92	-
40	2.80	0.97	-
41	1.80	1.02	-
42	1.20	1.06	-
43	0.80	1.11	-
44	0.50	1.16	-
45	0.40	1.21	10.00
46	0.20	1.25	10.00
47	0.10	1.30	10.00
48	0.10	2.10	10.00
49	0.10	2.10	14.70
50	-	2.20	19.40
51	-	2.20	24.10
52	-	2.30	28.80
53	-	2.30	33.50
54	-	2.40	38.20
55	-	2.40	42.90
56	-	2.50	47.60
57	-	2.50	52.30
58	-	2.60	57.00
59	-	2.60	61.70
60	-	-	-

Note: All rates are per 1000

APPENDIX VI

Summary of the Benefit Structure of Punjab Government Pension Scheme

The Pension Scheme Members of Punjab Government were entitled to the following pension benefits on normal and early retirement, death and disability as at June 30, 2009:

Normal Retirement Pension

The normal retirement age is 60 years.

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 Salary x Pensionable Service

If service is greater than 10 years:

- The rate of pension at normal retirement age is (7/300) 2.33% of the last drawn pensionable salary 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 salary

  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

Early retirement is applicable on the completion of 25 years of continuous service.

- The rate of pension at early retirement age is 2.33% of the last drawn pensionable salary 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 salary

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

Death in Service

If service is less than 5 years:

- Nil

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 Salary x Service

If service is greater than 10 years:

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

  Widow's Pension = 50% x basic pension

  Widow's pension is paid to eligible children in case of death of the widow. 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 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)

Death after Retirement

In case of death after retirement, the widow is entitled to receive 50% of the pension being received by the retiree.

Widow's pension is paid to eligible children in case of death of the widow. Eligible children are defined as legal male child under the age of 21 years and legal unmarried daughter. In the absence of widow and eligible children, the pension is payable to the dependents (such as parents, widow daughter etc.) for the remaining guaranteed period

Ill-health Pension

If service is less than 5 years:

- Nil

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 Salary x Service

If service is greater than 10 years:

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

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

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

Age	Commutation Factors	Age	Commutation Factors	Age	Commutation 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		

APPENDIX VII

PROJECTED PENSION EXPENSE AS PERCENTAGE OF REVENUE

The projected Pension payment expense as % of annual Revenue over the next 30 years if it grows at the rate of 8%, 10% or 12% per annum would be as follows:

Year	Projected Revenue @ 8% growth	Total Pension Expense	Pension Expense as % of Revenue	Projected Revenue @ 10% growth	Total Pension Expense	Pension Expense as % of Revenue	Projected Revenue @ 12% growth	Total Pension Expense	Pension Expense as % of Revenue
2010 - 11	381.2	23.4	6%	381.2	23.4	6%	381.2	23.4	6%
2011 - 12	411.70	26.6	6%	419.32	26.6	6%	426.94	26.6	6%
2012 - 13	444.63	30.0	7%	461.25	30.0	7%	478.18	30.0	6%
2013 - 14	480.20	35.3	7%	507.38	35.3	7%	535.56	35.3	7%
2014 - 15	518.62	38.5	7%	558.11	38.5	7%	599.83	38.5	6%
2015 - 16	560.11	46.6	8%	613.93	46.6	8%	671.80	46.6	7%
2016 - 17	604.92	50.8	8%	675.32	50.8	8%	752.42	50.8	7%
2017 - 18	653.31	59.4	9%	742.85	59.4	8%	842.71	59.4	7%
2018 - 19	705.57	67.2	10%	817.14	67.2	8%	943.84	67.2	7%
2019 - 20	762.02	77.5	10%	898.85	77.5	9%	1,057.10	77.5	7%
2020 - 21	822.98	89.4	11%	988.73	89.4	9%	1,183.95	89.4	8%
2021 - 22	888.82	101.5	11%	1,087.61	101.5	9%	1,326.02	101.5	8%
2022 - 23	959.93	118.7	12%	1,196.37	118.7	10%	1,485.15	118.7	8%
2023 - 24	1,036.72	130.8	13%	1,316.01	130.8	10%	1,663.36	130.8	8%
2024 - 25	1,119.66	154.3	14%	1,447.61	154.3	11%	1,862.97	154.3	8%
2025 - 26	1,209.23	177.2	15%	1,592.37	177.2	11%	2,086.52	177.2	8%
2026 - 27	1,305.97	196.1	15%	1,751.60	196.1	11%	2,336.91	196.1	8%
2027 - 28	1,410.45	219.5	16%	1,926.76	219.5	11%	2,617.33	219.5	8%
2028 - 29	1,523.28	249.5	16%	2,119.44	249.5	12%	2,931.41	249.5	9%
2029 - 30	1,645.15	263.8	16%	2,331.38	263.8	11%	3,283.18	263.8	8%
2030 - 31	1,776.76	277.9	16%	2,564.52	277.9	11%	3,677.17	277.9	8%
2031 - 32	1,918.90	303.0	16%	2,820.98	303.0	11%	4,118.43	303.0	7%
2032 - 33	2,072.41	319.3	15%	3,103.07	319.3	10%	4,612.64	319.3	7%
2033 - 34	2,238.20	343.6	15%	3,413.38	343.6	10%	5,166.15	343.6	7%
2034 - 35	2,417.26	366.3	15%	3,754.72	366.3	10%	5,786.09	366.3	6%
2035 - 36	2,610.64	389.3	15%	4,130.19	389.3	9%	6,480.42	389.3	6%
2036 - 37	2,819.49	415.9	15%	4,543.21	415.9	9%	7,258.08	415.9	6%
2037 - 38	3,045.05	445.8	15%	4,997.53	445.8	9%	8,129.04	445.8	5%
2038 - 39	3,288.65	478.7	15%	5,497.28	478.7	9%	9,104.53	478.7	5%
2039 - 40	3,551.75	532.7	15%	6,047.01	532.7	9%	10,197.07	532.7	5%

APPENDIX VIII

FUNDING OPTIONS FOR GP FUND

The amount of General Provident Fund payment of an employee is the accumulated contributions with interest deducted from his/her salaries during the service. There are no GP Fund assets as present and the amount of total accumulated balances works out to **Rs.89.8 billion** as at the end of fiscal year 2009-10.

The growth in GP Fund balances on both nominal and real basis is as follows:

Nominal Basis

Year	Total Annual Contribution	Total Interest Income	Estimated GPF Liability at year End
2009 - 10			89.8
2010 - 11	5.6	11.1	102.4
2011 - 12	6.2	12.6	116.3
2012 - 13	6.8	14.3	131.8
2013 - 14	7.5	16.1	148.6
2014 - 15	8.3	18.1	167.6
2015 - 16	9.2	20.4	187.7
2016 - 17	10.1	22.8	210.4
2017 - 18	11.1	25.5	234.3
2018 - 19	12.3	28.3	260.3
2019 - 20	13.5	31.4	287.7
2020 - 21	14.8	34.7	316.0
2021 - 22	16.2	38.0	346.0
2022 - 23	17.7	41.5	376.2
2023 - 24	19.3	45.1	408.6
2024 - 25	20.9	48.8	439.6
2025 - 26	22.8	52.5	470.3
2026 - 27	24.7	56.0	503.3
2027 - 28	26.7	59.9	537.3
2028 - 29	28.8	63.8	571.8
2029 - 30	31.2	67.8	614.7
2030 - 31	33.6	72.9	667.6
2031 - 32	36.5	79.1	725.9
2032 - 33	39.7	86.0	795.0
2033 - 34	43.2	94.2	873.1
2034 - 35	47.1	103.5	961.7
2035 - 36	51.5	114.0	1062.9
2036 - 37	56.3	126.0	1177.6
2037 - 38	61.7	139.6	1305.8
2038 - 39	67.8	154.8	1448.4
2039 - 40	74.6	171.7	1597.5

Real Basis (assuming 2009-10 as the base year)

Year	Total Annual Contribution	Total Interest Income	Estimated GPF Liability at year End
2009 - 10			77.8
2010 - 11	5.2	3.2	82.5
2011 - 12	5.3	3.4	87.2
2012 - 13	5.4	3.6	91.9
2013 - 14	5.5	3.7	96.4
2014 - 15	5.7	3.9	101.1
2015 - 16	5.8	4.1	105.3
2016 - 17	5.9	4.2	109.7
2017 - 18	6.0	4.4	113.6
2018 - 19	6.1	4.5	117.4
2019 - 20	6.2	4.7	120.6
2020 - 21	6.3	4.8	123.1
2021 - 22	6.4	4.9	125.4
2022 - 23	6.5	4.9	126.7
2023 - 24	6.6	5.0	128.0
2024 - 25	6.6	5.0	128.0
2025 - 26	6.7	5.0	127.4
2026 - 27	6.7	4.9	126.8
2027 - 28	6.7	4.9	125.9
2028 - 29	6.7	4.8	124.6
2029 - 30	6.7	4.8	124.5
2030 - 31	6.7	4.8	125.7
2031 - 32	6.7	4.8	127.0
2032 - 33	6.8	4.8	129.3
2033 - 34	6.8	4.9	131.8
2034 - 35	6.9	5.0	134.8
2035 - 36	7.0	5.1	138.3
2036 - 37	7.0	5.2	142.2
2037 - 38	7.2	5.3	146.3
2038 - 39	7.3	5.5	150.6
2039 - 40	7.4	5.6	154.1

The most appropriate Funding approach in case of a GP Fund is that the Government starts making contributions deducted from the salaries of the employees to the Fund on regular basis and amortize the accrued liability over a period of 10, 20 or 30 years. In such case, the interest amount credited to the GP Fund balances would be based on the actual yield of the Fund assets. For example if Government starts making contributions (deducted from employees) to GP Fund from 2010-11 and amortize the accumulated GP Fund liability of **Rs.89.8 billion**, the annual instalment for liability (apart from regular contribution) for different durations would be as follows:

Amortization Period	Annual Instalment payable at the middle of the Year
5 Years	23.5 billion
10 Years	15.0 billion
15 Years	12.5 billion
20 Years	11.4 billion
25 Years	10.8 billion
30 Years	10.5 billion

Example A

If it is assumed that:

- past service GP Fund liability of **Rs.89.8 billion** is amortized over 30 years with increasing instalments; and

- annual GP Fund contributions deducted from the salaries of the employees are contributed to the GP Fund;

the GP Fund contributions for next 30 years would be as follows:

Year	Past Liability Amortization Instalment	Annual Regular Contribution deducted from Salaries	Total Amount of Contribution to GP Fund
2010 - 11	2.0	5.6	7.6
2011 - 12	2.0	6.2	8.2
2012 - 13	3.0	6.8	9.8
2013 - 14	3.0	7.5	10.5
2014 - 15	4.0	8.3	12.3
2015 - 16	5.1	9.2	14.3
2016 - 17	6.2	10.1	16.3
2017 - 18	7.4	11.1	18.5
2018 - 19	8.7	12.3	21.0
2019 - 20	10.1	13.5	23.6
2020 - 21	11.6	14.8	26.4
2021 - 22	13.2	16.2	29.4
2022 - 23	14.9	17.7	32.6
2023 - 24	16.7	19.3	36.0
2024 - 25	18.6	20.9	39.5
2025 - 26	20.7	22.8	43.5
2026 - 27	22.9	24.7	47.6
2027 - 28	25.2	26.7	51.9
2028 - 29	27.7	28.8	56.5
2029 - 30	30.4	31.2	61.6
2030 - 31	33.3	33.6	66.9
2031 - 32	36.3	36.5	72.8
2032 - 33	39.6	39.7	79.3
2033 - 34	43.1	43.2	86.3
2034 - 35	46.8	47.1	93.9
2035 - 36	50.8	51.5	102.3
2036 - 37	55.1	56.3	111.4
2037 - 38	59.6	61.7	121.3
2038 - 39	64.4	67.8	132.2
2039 - 40	69.6	74.6	144.2

Example B

If it is assumed that:

- past service GP Fund liability of Rs.**89.8 billion** is amortized over 20 years with increasing instalments; and

- annual GP Fund contributions deducted from the salaries of the employees are contributed to the GP Fund;

the GP Fund contributions for next 30 years would be as follows:

Year	Past Liability Amortization Instalment	Annual Regular Contribution deducted from Salaries	Total Amount of Contribution to GP Fund
2010 - 11	2.0	5.6	7.6
2011 - 12	2.0	6.2	8.2
2012 - 13	3.0	6.8	9.8
2013 - 14	3.0	7.5	10.5
2014 - 15	4.0	8.3	12.3
2015 - 16	5.7	9.2	14.9
2016 - 17	7.5	10.1	17.6
2017 - 18	9.5	11.1	20.6
2018 - 19	11.7	12.3	24.0
2019 - 20	14.2	13.5	27.7
2020 - 21	16.9	14.8	31.7
2021 - 22	19.9	16.2	36.1
2022 - 23	23.3	17.7	41.0
2023 - 24	26.9	19.3	46.2
2024 - 25	31.0	20.9	51.9
2025 - 26	35.5	22.8	58.3
2026 - 27	40.5	24.7	65.2
2027 - 28	46.0	26.7	72.7
2028 - 29	52.1	28.8	80.9
2029 - 30	58.8	31.2	90.0
2030 - 31		33.6	33.6
2031 - 32		36.5	36.5
2032 - 33		39.7	39.7
2033 - 34		43.2	43.2
2034 - 35		47.1	47.1
2035 - 36		51.5	51.5
2036 - 37		56.3	56.3
2037 - 38		61.7	61.7
2038 - 39		67.8	67.8
2039 - 40		74.6	74.6

Example C

If it is assumed that:

- past service GP Fund liability of **Rs.89.8 billion** is amortized over 10 years with increasing instalments; and
- annual GP Fund contributions deducted from the salaries of the employees are contributed to the GP Fund;

the GP Fund contributions for next 30 years would be as follows:

Year	Past Liability Amortization Instalment	Annual Regular Contribution deducted from Salaries	Total Amount of Contribution to GP Fund
2010 - 11	2.0	5.6	7.6
2011 - 12	3.4	6.2	9.6
2012 - 13	5.2	6.8	12.0
2013 - 14	7.8	7.5	15.3
2014 - 15	11.2	8.3	19.5
2015 - 16	15.9	9.2	25.1
2016 - 17	22.4	10.1	32.5
2017 - 18	31.1	11.1	42.2
2018 - 19	43.1	12.3	55.4
2019 - 20	59.4	13.5	72.9
2020 - 21		14.8	14.8
2021 - 22		16.2	16.2
2022 - 23		17.7	17.7
2023 - 24		19.3	19.3
2024 - 25		20.9	20.9
2025 - 26		22.8	22.8
2026 - 27		24.7	24.7
2027 - 28		26.7	26.7
2028 - 29		28.8	28.8
2029 - 30		31.2	31.2
2030 - 31		33.6	33.6
2031 - 32		36.5	36.5
2032 - 33		39.7	39.7
2033 - 34		43.2	43.2
2034 - 35		47.1	47.1
2035 - 36		51.5	51.5
2036 - 37		56.3	56.3
2037 - 38		61.7	61.7
2038 - 39		67.8	67.8
2039 - 40		74.6	74.6

APPENDIX IX

FUNDING OPTIONS FOR PENSION FUND

In view of the expected increase in annual pension benefit payments, Punjab Government has set up a Pension Fund so that a portion of pension payments can be financed directly from the Fund and the burden on provincial revenue can be reduced.

The Punjab Pension Fund Act, 2007 was officially enacted (after approval from the Provincial Legislature) on March 7, 2007. Funding of the Pension Fund is to be made through budgetary allocations.

Punjab Government is contemplating various possibilities of capital injections into the Fund. It is, however, extremely important to determine adequacy of capital injections versus objectives to be achieved by these contributions. Government can then decide whether it needs to make a change in proposed capital contribution amount and/or objectives of funding.

Examples of some of the objectives are as follows:

i. Pension Fund is accumulated at a relatively low rate in first few (say 5) years and then earnings from the Fund are used to make payments in excess of expectations (if any) to make pension payments a smooth % of the revenue of Government of Punjab. For instance, the pension payments during a fiscal year are approximately 6% of the Revenue. If pension payments during any fiscal year is significantly in excess of 6% of Revenue due to high turnover of the employees, the additional payments may partially or fully funded by the Pension Fund assets.

ii. Alternately, if there is revenue shortfall or expenditure required by the Govt. on some other priority area, the fiscal space generated by the Fund can be used to bridge this gap.

iii. Earnings from the Fund are used to make payments in excess of 6% of the revenue of Government of Punjab each year for a period of 10 years.

iv. Earnings from the Fund are used to make 30% of payments of the total pension expense; the remaining 70% are met by the Government of Punjab each year for a period of 10 years.

v. Earnings from the Fund are used to make payments 50% of the payments in excess of Rs.16 billion each year for a period of 10 years.

vi. Earnings from the Fund are used to make payments in excess of 10% or 20% of Revenue Surplus each year for a period of 10 years.

Based on these options, Initial lump-sum Capital required to meet the payments for the next 10 years are as follows:

Options	Initial lump-sum Capital Required (Rs. Billion)
In excess of 6% of Revenue	57.38
In excess of 7% of Revenue	21.64
In excess of 8% of Revenue	3.61
20% of total expected pension expense	67.09
25% of total expected pension expense	83.86
30% of total expected pension expense	100.63
30% in excess of Rs. 16 billion	60.63
40% in excess of Rs. 16 billion	80.84
50% in excess of Rs. 16 billion	101.05
In excess of 10% of Revenue Surplus	172.37
In excess of 20% of Revenue Surplus	21.64

Moreover, if let's say Punjab Govt. meets the **ALL** cash flows for next 5 or 7 years (and builds up the capital in the Pension Fund during the period), then minimum capital required in the Fund at the end of 5 or 7 years, so that its earnings meet the cash flows for next 10 years, is provided in the table below:

(Rs. billion)

Options	Capital Required after 5 years Deferral	Capital Required after 7 years Deferral
In excess of 6% of Revenue	211.35	320.59
In excess of 7% of Revenue	136.71	230.28
In excess of 8% of Revenue	69.31	139.99
20% of total expected pension expense	131.84	172.49
25% of total expected pension expense	164.80	215.62
30% of total expected pension expense	197.75	258.74
30% in excess of Rs. 16 billion	157.75	218.74
40% in excess of Rs. 16 billion	210.34	291.65
50% in excess of Rs. 16 billion	262.92	364.57
In excess of 10% of Revenue Surplus	397.00	545.23
In excess of 20% of Revenue Surplus	136.71	230.28

As can be seen, the capital requirement builds up rapidly over time since pension cash flows increase at a high rate of 14% per year.

If the Fund intends to meet its objective of "50% in excess of 16 billion" starting immediately (i.e. with no deferral period), capital required is lower than the amount required for "30% of total expected pension expense". However, if capital injection is made with a deferral period of 5 or 7 years, the situation changes significantly and less capital is required under the later objective.

It is, therefore, important to define objectives of the Fund clearly and accordingly work out the required capital injections to ensure that capital of the Fund does not deplete over time.

In reality, it will be difficult to inject large amounts of capital in one go, therefore the Fund can set an objective of accumulating a specified amount of capital over a defined number of years with equal payments every year,

i. with the Fund starting to meet target pension benefit payments after 5, 7 or 10 years;

   Given that Fund already has Rs.12 billion, annual capital contribution in the Fund required to accumulate capital of Rs.100 billion at the end of 5, 7 or 10 years are as follows:

End of year →	**5**	**7**	**10**
Capital Required (Rs. billion) →	12.41	7.28	3.57

ii. with the Fund starting to meet target pension benefit obligations immediately;

   Given that Fund already has Rs.12 billion at its disposal, annual contribution required in the Fund to meet the payouts from the Fund from earnings for a period of 10 years under the following options of payouts are:

(Rs. Billion)

Type of payout to be met by the Fund	Annual Contribution Required	Total Capital at End of year 10
In excess of 6% of Revenue	12.66	138.58
25% of total expected pension expense	20.05	212.47
30% in excess of Rs. 16 billion	13.57	147.67
In excess of 10% of Revenue Surplus	44.74	459.38
In excess of 20% of Revenue Surplus	21.99	231.93

As can be seen, the target capital amount at the end of 10 years is approximately equal to the capital contributed over the 10 year period.

From the tables above, it can be gauged that capital required is largely dependent upon objective of the Fund and time at which the Fund intends to begin meeting its targeted objective.

Two different options for funding Pension Fund and fiscal space generated from their interest income were analyzed. The results are presented as follows:

Option A

Assuming:

- annual contribution of Rs.10 billion is made to the Fund from the year 2010-11 to 2015-16 (i.e. the next 7 years);
- no payments are made from the Fund during the accumulation period of 7 year; and
- after accumulation period, the Fund begins to meet pension payments from investment income on the accumulated capital at the end of 7 years;

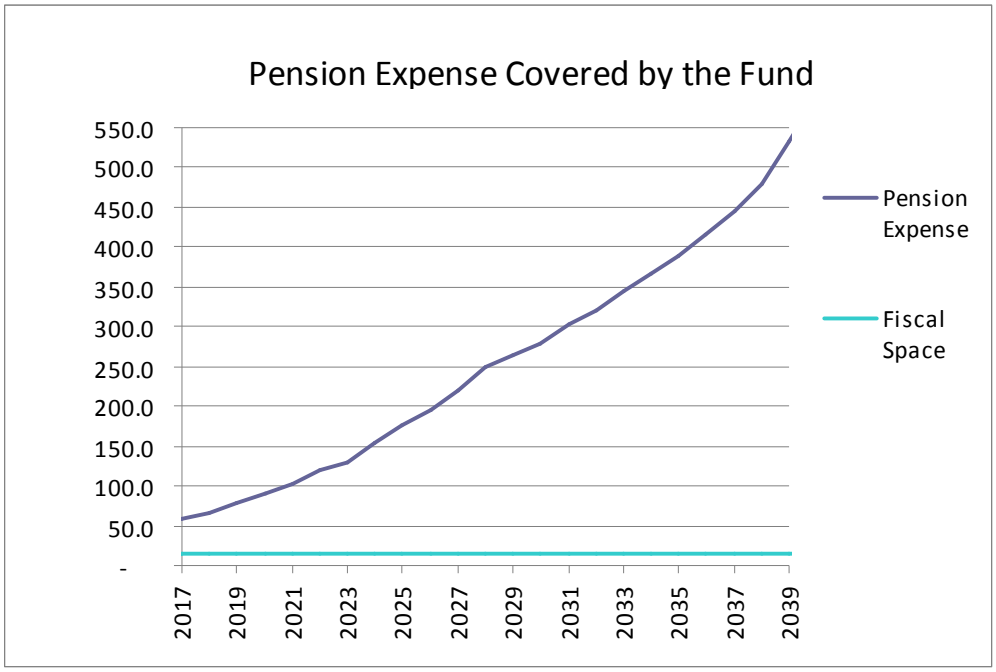
the percentage of pension cash flows met is given in the following table:

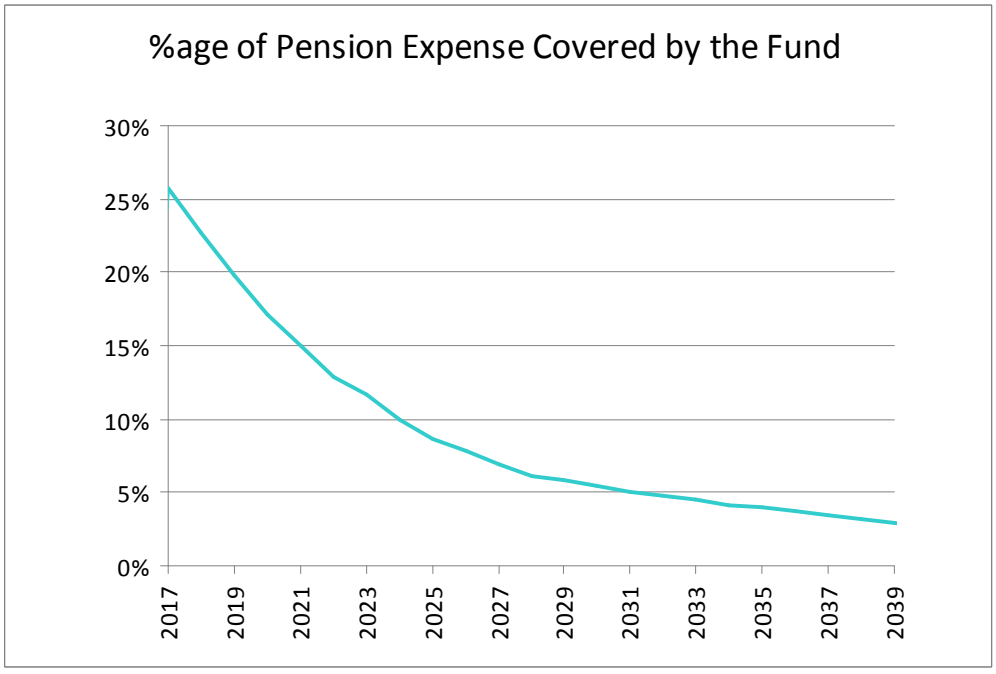
(Rs. Billion)

Year	Pension Expense	Contribution to the Fund	Return on Pension Fund OR Fiscal Space generated	Cumulative Contribution	Payment from the Fund	Payment of Pension Liability met by the Govt.	%age of Pension Liability covered by Fund
2010 - 11	23.4	10.0	1.4	23.4	Nil	23.4	Nil
2011 - 12	26.6	10.0	2.8	36.3	Nil	26.6	Nil
2012 - 13	30.0	10.0	4.4	50.6	Nil	30.0	Nil
2013 - 14	35.3	10.0	6.1	66.7	Nil	35.3	Nil
2014 - 15	38.5	10.0	8.0	84.7	Nil	38.5	Nil
2015 - 16	46.6	10.0	10.2	104.8	Nil	46.6	Nil
2016 - 17	50.8	10.0	12.6	127.4	Nil	50.8	Nil
2017 - 18	59.4	-	15.3	127.4	15.3	44.1	26%
2018 - 19	67.2	-	15.3	127.4	15.3	51.9	23%
2019 - 20	77.5	-	15.3	127.4	15.3	62.2	20%
2020 - 21	89.4	-	15.3	127.4	15.3	74.1	17%
2021 - 22	101.5	-	15.3	127.4	15.3	86.2	15%
2022 - 23	118.7	-	15.3	127.4	15.3	103.4	13%
2023 - 24	130.8	-	15.3	127.4	15.3	115.5	12%
2024 - 25	154.3	-	15.3	127.4	15.3	139.0	10%
2025 - 26	177.2	-	15.3	127.4	15.3	161.9	9%
2026 - 27	196.1	-	15.3	127.4	15.3	180.8	8%
2027 - 28	219.5	-	15.3	127.4	15.3	204.2	7%
2028 - 29	249.5	-	15.3	127.4	15.3	234.2	6%
2029 - 30	263.8	-	15.3	127.4	15.3	248.5	6%
2030 - 31	277.9	-	15.3	127.4	15.3	262.6	6%
2031 - 32	303.0	-	15.3	127.4	15.3	287.7	5%
2032 - 33	319.3	-	15.3	127.4	15.3	304.0	5%
2033 - 34	343.6	-	15.3	127.4	15.3	328.3	4%
2034 - 35	366.3	-	15.3	127.4	15.3	351.0	4%
2035 - 36	389.3	-	15.3	127.4	15.3	374.0	4%
2036 - 37	415.9	-	15.3	127.4	15.3	400.6	4%
2037 - 38	445.8	-	15.3	127.4	15.3	430.5	3%
2038 - 39	478.7	-	15.3	127.4	15.3	463.4	3%
2039 - 40	532.7	-	15.3	127.4	15.3	517.4	3%

After 7 years (i.e. in 2016-17), the Fund generates a fiscal space of Rs. 15.3 billion and this amount stays constant thereafter. In real terms fiscal space generated is declining because other expenses would increase in future years due to inflation, whereas this fiscal space remains constant, resulting in a net decline in the real value of fiscal space.

In the year 2016-17, the expected percentage of pension expense met by the Fund is 25% and declines to 3% in the year 2038-39. This is because, the Fund maintains its capital whereas the pension outgo keeps increasing, leading to a decline in the percentage of pension liability met by the Fund. This can be seen from the graphs below:





It can be seen from the above graphs that the gap between the total pension liability and fiscal space generated increase significantly over the 30 year period and hence reduces the percentage of pension liability covered by the Fund.

Option B

Assuming:

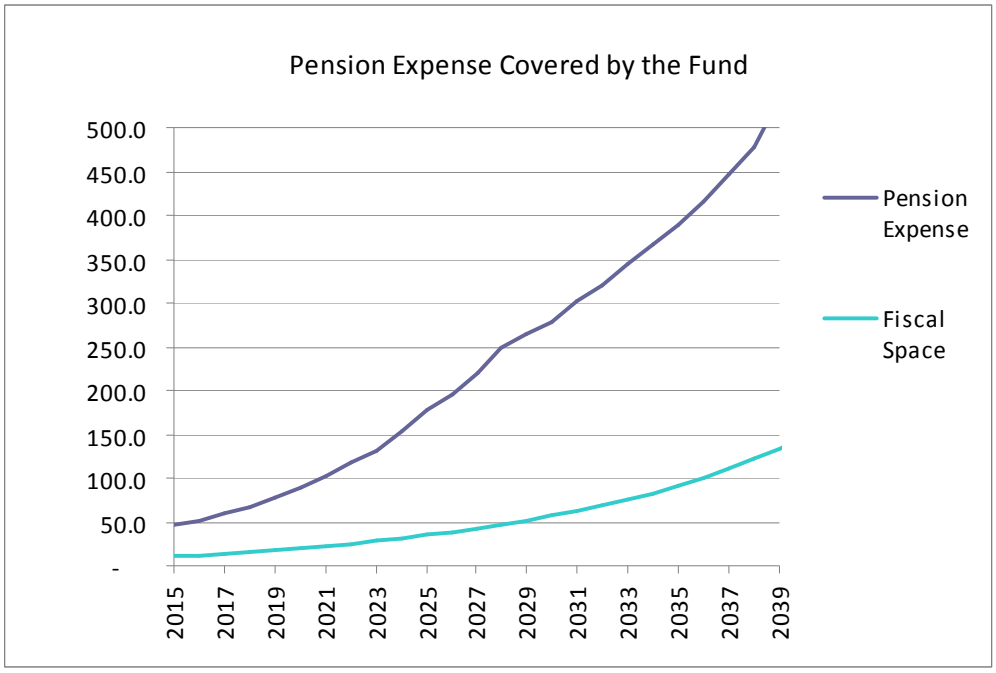
- annual contribution of Rs.10 billion is made to the Pension Fund say from the year 2010-11 to 2014-15 (i.e. the next 5 years);
- no payments are made from the Fund during the accumulation period;
- after accumulation period, 10% of Basic Salaries is contributed annually to the Fund; and
- the Fund begins to meet pension payments from the investment income earned on the accumulated capital and annual contributions;

the percentage of pension cash flows met is given in the following table:

(Rs. Billion)

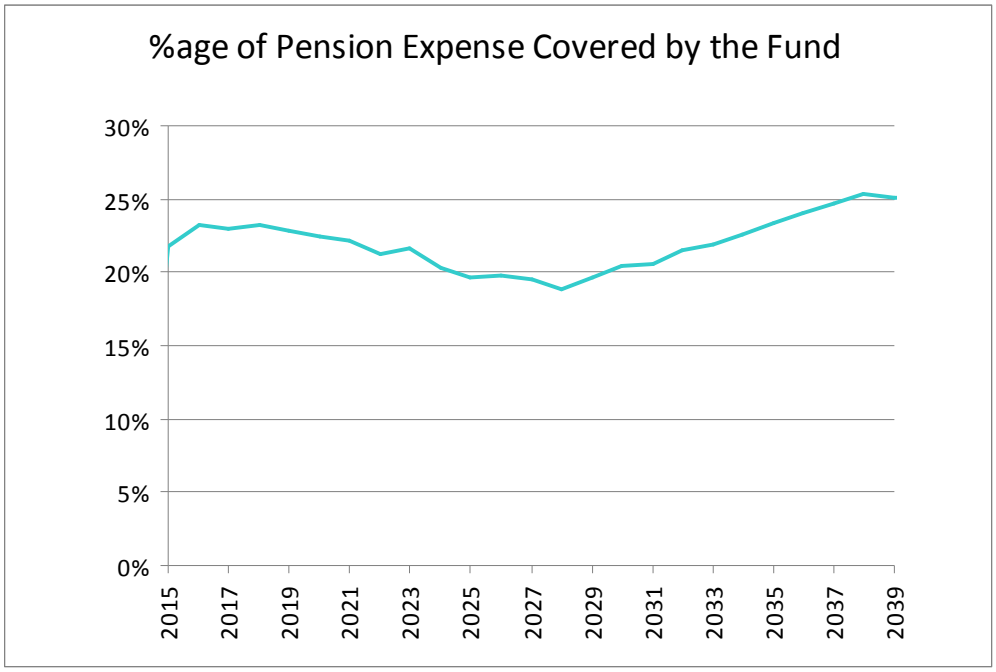
Year	Pension Expense	Contribution to the Fund	Return on Pension Fund OR Fiscal Space generated	Cumulative Contribution	Payment from the Fund	Payment of Pension Liability met by the Govt.	%age of Pension Liability covered by Fund
2010 - 11	23.4	10.0	1.4	23.4	Nil	23.4	Nil
2011 - 12	26.6	10.0	2.8	36.3	Nil	26.6	Nil
2012 - 13	30.0	10.0	4.4	50.6	Nil	30.0	Nil
2013 - 14	35.3	10.0	6.1	66.7	Nil	35.3	Nil
2014 - 15	38.5	10.0	8.0	84.7	Nil	38.5	Nil
2015 - 16	46.6	13.7	10.2	98.4	10.2	36.4	22%
2016 - 17	50.8	15.0	11.8	113.4	11.8	38.9	23%
2017 - 18	59.4	16.3	13.6	129.7	13.6	45.8	23%
2018 - 19	67.2	17.8	15.6	147.5	15.6	51.6	23%
2019 - 20	77.5	19.4	17.7	166.9	17.7	59.8	23%
2020 - 21	89.4	21.0	20.0	187.9	20.0	69.4	22%
2021 - 22	101.5	22.8	22.5	210.7	22.5	79.0	22%
2022 - 23	118.7	24.7	25.3	235.4	25.3	93.4	21%
2023 - 24	130.8	26.7	28.2	262.0	28.2	102.5	22%
2024 - 25	154.3	28.9	31.4	291.0	31.4	122.9	20%
2025 - 26	177.2	31.2	34.9	322.2	34.9	142.3	20%
2026 - 27	196.1	33.7	38.7	355.9	38.7	157.4	20%
2027 - 28	219.5	36.5	42.7	392.4	42.7	176.8	19%
2028 - 29	249.5	39.5	47.1	431.8	47.1	202.4	19%
2029 - 30	263.8	42.7	51.8	474.6	51.8	212.0	20%
2030 - 31	277.9	46.6	56.9	521.1	56.9	220.9	20%
2031 - 32	303.0	51.0	62.5	572.1	62.5	240.5	21%
2032 - 33	319.3	56.0	68.7	628.1	68.7	250.6	22%
2033 - 34	343.6	61.8	75.4	689.9	75.4	268.2	22%
2034 - 35	366.3	68.3	82.8	758.2	82.8	283.5	23%
2035 - 36	389.3	75.7	91.0	833.9	91.0	298.3	23%
2036 - 37	415.9	84.2	100.1	918.0	100.1	315.8	24%
2037 - 38	445.8	93.6	110.2	1,011.7	110.2	335.6	25%
2038 - 39	478.7	104.3	121.4	1,116.0	121.4	357.3	25%
2039 - 40	532.7	116.4	133.9	1,232.4	133.9	398.7	25%

After 5 years (i.e. the year 2015-16), fiscal space of Rs. 10.2 billion is generated, which continues to increase as the pension liability increases. This can be seen from the graph presented below:



Although, the gap between the total pension liability and fiscal space increases, the regular contributions of a fixed percentage of basic salary assist to increase the fiscal space.

Percentage of pension liability covered by the Fund remains in the range of 19% to 25%, but shows a tendency to increase after the end of the year 2038-39. This can be seen from the graph below:



It can be clearly seen from the graph above that without regular contributions to the Fund, the Fund is unable to adequately increase the fiscal space and percentage of total pension liability decreases with time.

The above also reflect that it is unpractical to have the objective of accumulating sufficient assets in the Fund to make pension outgoes a completely off-budget item.

Keeping in view the above options of funding methodology the Govt. needs to determine the route it wishes to adapt.

Finance Department was interested to have percentage of pension payments determined if the reverse situation was taken and contributions to the Pension Fund were defined upfront that are considered to be more in the affordable range. Therefore, two additional funding options were taken into account for Punjab Government Pension Fund, which accumulates reasonable assets so that interest income on the assets can be used to smooth Pension payments as % of Revenue. The results are as follows:

Option C

Assuming:

- annual contribution of Rs.5 billion is made to the Pension Fund say from the year 2010-11 to 2014-15 (i.e. the next 5 years);
- no payments are made from the Fund during the accumulation period;
- after accumulation period, 5% of Basic Salaries is contributed annually to the Fund; and
- the Fund begins to meet pension payments from the total investment income earned on the accumulated capital from year 2015-16 onwards;

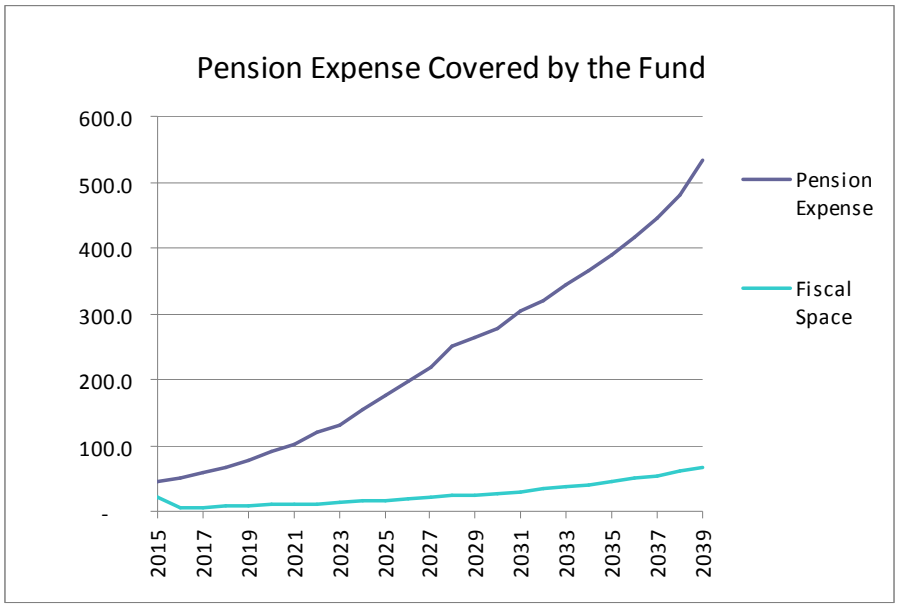
the percentage of pension cash flows met is given in the following table:

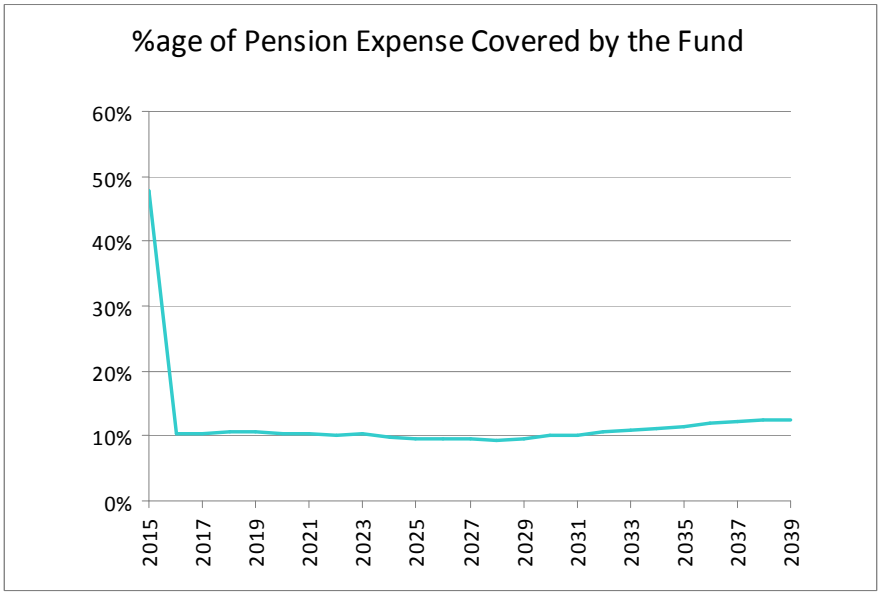
(Rs. Billion)

Year	Pension Expense	Contribution to the Fund	Return on Pension Fund OR Fiscal Space generated	Cumulative Contribution	Payment from the Fund	Payment of Pension Liability met by the Govt.	%age of Pension Liability covered by Fund
2010 - 11	23.4	5.0	1.4	18.4	Nil	23.4	Nil
2011 - 12	26.6	5.0	2.2	25.7	Nil	26.6	Nil
2012 - 13	30.0	5.0	3.1	33.7	Nil	30.0	Nil
2013 - 14	35.3	5.0	4.0	42.8	Nil	35.3	Nil
2014 - 15	38.5	5.0	5.1	52.9	Nil	38.5	Nil
2015 - 16	46.6	6.9	6.3	43.9	22.3	24.3	48%
2016 - 17	50.8	7.5	5.3	51.4	5.3	45.5	10%
2017 - 18	59.4	8.2	6.2	59.5	6.2	53.2	10%
2018 - 19	67.2	8.9	7.1	68.4	7.1	60.0	11%
2019 - 20	77.5	9.7	8.2	78.1	8.2	69.3	11%
2020 - 21	89.4	10.5	9.4	88.6	9.4	80.0	10%
2021 - 22	101.5	11.4	10.6	100.0	10.6	90.9	10%
2022 - 23	118.7	12.3	12.0	112.3	12.0	106.7	10%
2023 - 24	130.8	13.3	13.5	125.7	13.5	117.3	10%
2024 - 25	154.3	14.5	15.1	140.1	15.1	139.2	10%
2025 - 26	177.2	15.6	16.8	155.8	16.8	160.4	9%
2026 - 27	196.1	16.9	18.7	172.6	18.7	177.4	10%
2027 - 28	219.5	18.2	20.7	190.8	20.7	198.8	9%
2028 - 29	249.5	19.7	22.9	210.6	22.9	226.6	9%
2029 - 30	263.8	21.4	25.3	231.9	25.3	238.6	10%
2030 - 31	277.9	23.3	27.8	255.2	27.8	250.0	10%
2031 - 32	303.0	25.5	30.6	280.7	30.6	272.4	10%
2032 - 33	319.3	28.0	33.7	308.7	33.7	285.6	11%
2033 - 34	343.6	30.9	37.0	339.6	37.0	306.5	11%
2034 - 35	366.3	34.1	40.8	373.7	40.8	325.5	11%
2035 - 36	389.3	37.9	44.8	411.6	44.8	344.4	12%
2036 - 37	415.9	42.1	49.4	453.7	49.4	366.5	12%
2037 - 38	445.8	46.8	54.4	500.5	54.4	391.4	12%
2038 - 39	478.7	52.2	60.1	552.7	60.1	418.7	13%
2039 - 40	532.7	58.2	66.3	610.9	66.3	466.3	12%

After 5 years (i.e. the year 2015-16), fiscal space (based on accumulated interest on capital/contributions) of Rs. 22.3 billion is generated which pertains to 48% of the total Pension expense of 2015-16. The fiscal space generated from 2016-17 and onwards covers 9% to 13% of the expense during the next 25 years.

The results can be seen from the graphs presented below:





Option D

Assuming:

- 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 is made to the Pension Fund (i.e. the next 5 years);
- no payments are made from the Fund during the accumulation period;
- after accumulation period, 5% of Basic Salaries is contributed annually to the Fund; and
- the Fund begins to meet pension payments from the total investment income earned on the accumulated capital and annual contributions from year 2015-16;

the percentage of pension cash flows met is given in the following table:

(Rs. Billion)

Year	Pension Expense	Contribution to the Fund	Return on Pension Fund OR Fiscal Space generated	Cumulative Contribution	Payment from the Fund	Payment of Pension Liability met by the Govt.	%age of Pension Liability covered by Fund
2010 - 11	23.4	2.0	1.4	15.4	Nil	23.4	Nil
2011 - 12	26.6	2.0	1.9	19.3	Nil	26.6	Nil
2012 - 13	30.0	3.0	2.3	24.6	Nil	30.0	Nil
2013 - 14	35.3	3.0	3.0	30.6	Nil	35.3	Nil
2014 - 15	38.5	4.0	3.7	38.2	Nil	38.5	Nil
2015 - 16	46.6	6.9	4.6	32.9	16.8	29.7	36%
2016 - 17	50.8	7.5	3.9	40.4	3.9	46.8	8%
2017 - 18	59.4	8.2	4.8	48.5	4.8	54.6	8%
2018 - 19	67.2	8.9	5.8	57.4	5.8	61.3	9%
2019 - 20	77.5	9.7	6.9	67.1	6.9	70.6	9%
2020 - 21	89.4	10.5	8.1	77.6	8.1	81.3	9%
2021 - 22	101.5	11.4	9.3	89.0	9.3	92.2	9%
2022 - 23	118.7	12.3	10.7	101.3	10.7	108.0	9%
2023 - 24	130.8	13.3	12.2	114.7	12.2	118.6	9%
2024 - 25	154.3	14.5	13.8	129.1	13.8	140.6	9%
2025 - 26	177.2	15.6	15.5	144.8	15.5	161.7	9%
2026 - 27	196.1	16.9	17.4	161.6	17.4	178.7	9%
2027 - 28	219.5	18.2	19.4	179.8	19.4	200.1	9%
2028 - 29	249.5	19.7	21.6	199.6	21.6	227.9	9%
2029 - 30	263.8	21.4	24.0	220.9	24.0	239.9	9%
2030 - 31	277.9	23.3	26.5	244.2	26.5	251.4	10%
2031 - 32	303.0	25.5	29.3	269.7	29.3	273.7	10%
2032 - 33	319.3	28.0	32.4	297.7	32.4	286.9	10%
2033 - 34	343.6	30.9	35.7	328.6	35.7	307.9	10%
2034 - 35	366.3	34.1	39.4	362.7	39.4	326.8	11%
2035 - 36	389.3	37.9	43.5	400.6	43.5	345.8	11%
2036 - 37	415.9	42.1	48.1	442.7	48.1	367.8	12%
2037 - 38	445.8	46.8	53.1	489.5	53.1	392.7	12%
2038 - 39	478.7	52.2	58.7	541.7	58.7	420.0	12%
2039 - 40	532.7	58.2	65.0	599.9	65.0	467.7	12%

The fiscal space generated under this case for 2015-16 is Rs.16.8 billion which is 36% of the total Pension expense during the year. The fiscal space generated during the next 25 years ranges from 8% to 12% of the annual Pension expense.