University of Science & Technology

Bannu

Employees' Pension Fund

Actuarial Valuation Report as at 30.06.2018

Tuesday, November 13, 2018

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1 Overview

This Actuarial Valuation Report (herein referred to as a 'Report') has been prepared at the request of University of Science & Technology, Bannu (USTB) to determine the Actuarial Liability of their Employees' Pension Scheme as at June 30, 2018, in order to setup the necessary Pension Fund. USTB provides Pension Benefits as per the Pension Benefit Rules of Federal Government. Summary of these Rules is shown in Plan Provision section.

We have relied upon data provided by USTB's management in the written form and through oral communication. The reasonability checks performed on the data are presented in the data section of the Report.

This Report is solely for the use of Management and the Auditors of USTB. It may not be modified, incorporated into or used in other material, sold or otherwise provided, in whole or in part, to any other person or entity, without our permission.

USTB should notify us promptly after receipt of this Report, if it is aware of any information that would affect the results of this Report and which has not been communicated to us or is not incorporated herein.

2 Scope of Work

Brief description of the scope of work is as follow:

- Calculation of Actuarial Liability in respect of existing pensioners and active employees at the Valuation Date.
- Determination of the Funding Deficit as at the Valuation Date.
- Determination of the Required Annual Contribution rate payable by USTB as percentage of Pensionable Salary to meet the cost of the future accrual of Pension Benefit.
- Determination of the projected Pension payments including Commutation for the next 25 years.

3 Compliance with Professional Guidance

This report complies with the applicable actuarial standards issued by Pakistan Society of Actuaries (PSoA) as follow:

- PSoA Guidance Note 6 (GN6): General Actuarial Practice
- PSoA Guidance Note 3 (GN3) and Guidance Note 4 (GN4): Assumptions

We are not aware of any material changes or events that occurred subsequent to the valuation date of the data provided by USTB for this analysis that may have a material impact on the results of the Actuarial Exercise.

4 Terminologies Used

The terminology and acronyms used throughout the Report are as follows:

Attained Age is the age of an employee as at the Valuation Date.

Past service is the service of an employee from Date of Joining to Date of Valuation.

Entry age is the age at which an employee started service.

Present Value of Defined Benefit Obligation is the Present Value, of expected future payments required to settle the Obligation resulting from employee service in the current and prior periods.

Service Cost is the increase in Obligation resulting from employee service.

Future Accrual is expected future increase to the Obligation resulting from employee service in the future periods.

Past service cost is the increase in the Obligation for employee service in past periods, resulting in the current period from the introduction of, or changes to, benefits.

Current Service Cost is the increase in present value of Defined Benefit Obligation resulting from employee service in the current period.

Defined Benefit Plans are Post-Employment Benefit Plans other than Defined Contribution Plans.

Interest Cost is the increase during a period in the Present Value of Defined Benefit Obligation which arises because the benefits are one period closer to settlement.

Plan Assets comprise of assets held by an Employees Defined Benefit Scheme.

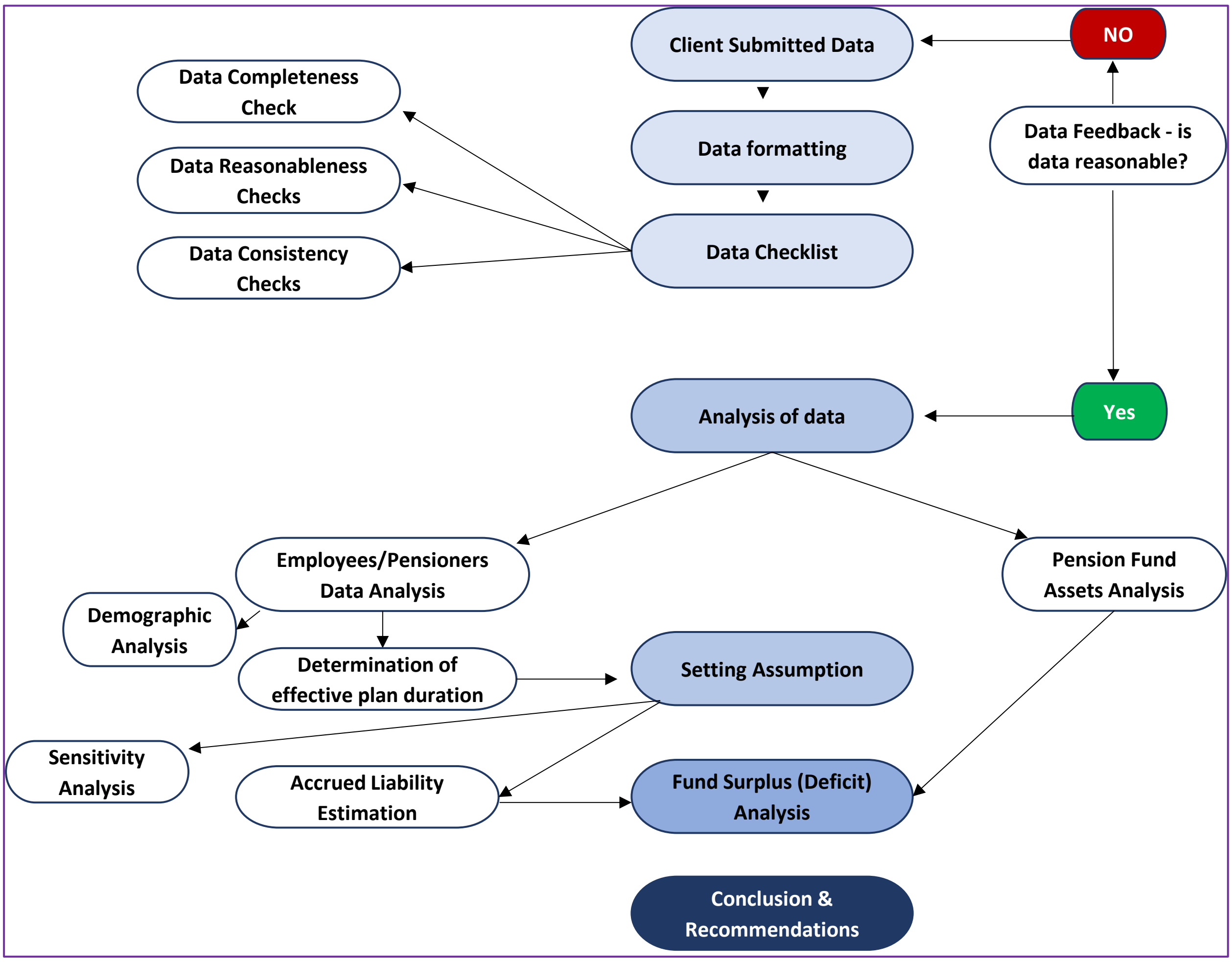
Deficit is an excess of Benefit Obligation over Plan Assets.

Surplus is an excess of Plan Assets over Benefit Obligation.

Return on Plan Assets is interest, dividends and other revenue derived from the Plan Assets excluding any costs of administering the Plan and any tax payable by the Plan.

5 Methodology

5.1 Process Flowchart



5.2 Data and Information

5.2.1 Data Received

The following data was received from USTB for the purposes of carrying out the actuarial valuation:

5.2.1.1 Employee Data

We requested USTB to send us data as at valuation date. The information was received from USTB and contained the following key fields:

- Name
- Date of Birth
- Date of Appointment
- Basic Pay Scale
- Date of Start of Pension Scheme Membership
- Eligible Salary for Pension Benefits

5.2.1.2 Pension Plan Assets Data

No Plan Assets were held by USTB as at Valuation Date.

5.2.2 Key Statistics

This section provides a summary of the data received for the Actuarial Valuation.

5.2.2.1 Number of Records

The tables below summarize the number of employee/pensioners records received and included in actuarial valuation:

Valuation Date	Total Number of Employees	Total Monthly Eligible Salary	Average Age	Average Past Service	Average Monthly Eligible Salary
30.06.2018	444	12,257,360	37	8.4	27,607

5.2.3 Verification of Data

We have relied on the information and data provided USTB in conducting our analysis. While independent verification of the data was not undertaken, it was reviewed for reasonability and consistency.

The checks for reasonability and consistency included the following:

- Employee / pensioner data checks:
  - Extreme values check — Outcomes and adjustments
    - Age above retirement age — No case found
    - Current Age under 18 years — No case found
    - Entry Age under 18 years — No case found
    - Past service more than 40 years — No case found
    - Negative past service — No case found
  - Blank values
    - Date of joining/membership scheme — No case found
    - Date of birth — No case found
    - Eligible salary — No case found

5.2.4 Unresolved Data Issues

There were no ambiguous data concerns that may have wedged the results drawn from this valuation.

5.3 Valuation Assumptions

To prepare the valuation report, assumptions are used as per the provision of International Accounting Standard 19 and as per Pakistan Society of Actuaries (PSoA) Guidance Notes. Actuarial assumptions comprise demographic assumptions (e.g. mortality, rates of employee turnover) and financial assumptions (e.g. discount rate, future salary increases, Pension Indexation/Increases).

Assumptions may differ from one valuation to the next because of changes in mandated requirements, plan experience, changes in expectations about the future and other factors. A change in assumptions is not an indication that prior assumptions were unreasonable when made.

5.3.1 Rate of Return on the Fund

This rate is used to obtain the Actuarial Liability of the projected benefits. For selection of Discount Rate, we have followed PSoA Discount Rate Committee recommendations issued as per PSoA GN 4.

Based on the weighted average duration of this Plan, which turns out to be **26 years**, the Discount Rate used as at June 30, 2018 is **11.75%** per annum.

5.3.2 Expected Salary Increase

Having regard to the current general practice by the Government, it is assumed that the eligible salaries would increase at the rate of **10.75%** per annum compound in the long range. The Valuation is sensitive to the gap between the interest and salary increase assumptions.

5.3.3 Expected Pension Increase

We have assumed that Pension would increase at the rate of **7%** per annum compound on the average.

5.3.4 Expected Medical Allowance Increase

We have assumed that Medical Allowance would not increase in future.

5.3.5 Expenses of Management of Pension Fund

It has been assumed that expenses related to the management of the Pension Fund will be borne by USTB.

5.3.6 Demographic Assumptions

The following demographic assumptions were used in valuing the liabilities and benefits under the plan.

Mortality rates for Active employees	SLIC (2001-05) Individual Life Ultimate Mortality Table with one year setback		
Withdrawal	Age based rates used. Withdrawals are assumed to occur at		
Table of Sample Rates			
Attained Age	**MORTALITY**	**WITHDRAWAL**	**RETIREMENT**
20	0.096%	6.375%	0.000%
25	0.106%	4.250%	0.000%
30	0.124%	2.975%	0.000%
35	0.158%	1.899%	0.000%
40	0.225%	0.950%	0.000%
45	0.355%	0.475%	0.000%
50	0.599%	0.275%	0.000%
55	1.013%	0.000%	0.000%

Mortality rates for male pensioners	SLIC (2001-05) Individual Life Ultimate Mortality Table with one year setback				
Mortality rates for widow pensioners	SLIC (2001-05) Individual Life Ultimate Mortality Table with four year setback				
For female spouse of a male employee it has been assumed that she is five					
Table of Sample Rates after superannuation age.					
Age	**MORTALITY**	**Age**	**MORTALITY**	**Age**	**MORTALITY**
60	1.613%	80	7.871%	100	41.967%
65	2.305%	85	11.926%		
70	3.225%	90	17.532%		
75	5.070%	95	26.084%		

5.4 Cash-flow Projection Assumptions

Cash-flow projections of future pension payouts are based on a number of assumptions, which include the following assumptions in addition to above demographic and financial assumptions.

5.4.1 Nature of Data Set

A closed pension set has been assumed, that is, no new entrants will enter the group.

5.4.2 Plan Benefit Rules

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

5.5 Actuarial Method

Benefit obligations are estimated using the Projected Unit Credit method. Under this method each participant's benefits under the plan are attributed to years of service, taking into consideration future salary increases and the plan's benefit allocation formula. Thus, the estimated total benefit to which each participant is expected to become entitled at retirement is broken down into units, each associated with a year of past or future credited service.

If an employee's service in later years will lead to a materially higher level of benefit than in earlier years, these benefits are attributed on a straight- line basis. A description of the calculation follows:

- An individual's estimated attributed benefit for valuation purposes related to a particular separation date (e.g. expected date of retirement, leaving service or death) is the benefit described under the plan based on credited service as at the measurement date, but determined using the projected salary that would be used in the calculation estimate of the benefit on the expected separation date.
- The benefit attributed to an individual's service during a plan year is the excess of the attributed benefit for valuation purposes at the end of the plan year over the attributed benefit for valuation purposes at the beginning of the plan year. Both attributed benefits are estimated from the same projections to the various anticipated separation dates.
- An individual's estimated benefit obligation is the present value of the attributed benefit for valuation purposes at the beginning of the plan year, and the service cost is the present value of the benefit attributed to the year of service in the plan year. If multiple decrements are used, the benefit obligation and the service cost for an individual are the sum of the component benefit obligations and service costs associated with the various anticipated separation dates. Such benefit obligations and service costs reflect the estimated attributed benefits and the probability of the individual separating on those dates.

In all cases, the **benefit obligation** is the total present value of the individuals' attributed benefits for valuation purposes at the measurement date, and the service cost is the total present value of the individuals' benefits attributable to service during the year. If multiple decrements are used, the present values take into account the probability of the individual leaving employment at the various anticipated separation dates.

6 Actuarial Results

Below are highlight of the results as at June 30, 2018.

6.1 Accrued Actuarial Liability

Total Accrued Liability in respect of past service of USTB employees as at June 30, 2018 is as follow:

UoG Employees' Defined Pension Benefit Obligation		FY ending June 30, 2018
1	Active Employees	432,600,324
2	Pensioners	-
3	**Total Accrued Liability**	**432,600,324**

6.2 Sensitivity Analysis

Below are highlight of the sensitivity analysis performed on Accrued Liability as at June 30, 2018.

Sensitivity		Total Accrued Liability	%age Change
1	Base Scenario	432,600,324	
2	1% Increase in Discount rate	336,700,812	-22%
3	1% Decrease in Discount rate	563,353,075	30%
4	1% Increase in Salary Increase rate	515,112,890	19%
5	1% Decrease in Salary Increase rate	364,070,616	-16%
6	1% Increase in Pension Increase rate	477,108,644	10%
7	1% Decrease in Pension Increase rate	397,939,209	-8%
8	1Year Mortality Set Back in used rate	438,052,368	1%
9	1Year Mortality Set Forward in used rate	427,136,581	-1%

6.3 Pension Fund Surplus (Deficit) Analysis

The Surplus (Deficit) in Pension Fund as at June 30, 2018 is as follow:

UoG Employees' Pension Fund surplus (deficit)		FY ending June 30, 2018
1	**Total Accrued Liability**	**432,600,324**
2	Fair Value of Plan Assets as at 30.06.2018	-
3	**Pension Fund surplus (deficit)**	**(432,600,324)**

- Total Accrued Actuarial Liability in respect of past service of USTB employees as at June 30, 2018 amounts to **432.600 million.**
- Total value of USTB employees' Pension Fund, as intimated by USTB, is NIL.
- Thus there is a Deficit in Pension Fund of **PKR 432.600 million** as at June 30, 2018.

6.4 Required annual contribution rate:

Currently USTB is making **NIL** contribution to the Pension Fund of the Pensionable salaries of the covered employees.

The Contribution Rate required to fund **only future accrual of Pension benefits** works out to be **32.6%** of the Pensionable Salary for the covered employees. This is applicable from July 1, 2018.

If the existing Deficit of **PKR 432.600 million** is not funded at this time and amortized over future working life time of active employees, the rate of Contribution will increase to **48.5%** of the Pensionable Salary, in order to fund the **existing Deficit** and **future accrual of Pension Fund.**

7 Cash-Flow Projections

7.1 Expected Pension Benefit Payments:

The expected commutations, pension and medical allowance payments over the next **25** years for current employees/pensioners is as follow:

Expected total benefit payments	Grand Total
Year 1	397,596
Year 2	655,771
Year 3	930,940
Year 4	3,292,435
Year 5	3,132,655
Year 6	7,466,880
Year 7	4,740,208
Year 8	14,926,128
Year 9	11,253,307
Year 10	17,184,847
Year 11	20,625,486
Year 12	24,176,325
Year 13	30,785,920
Year 14	65,847,839
Year 15	75,104,179
Year 16	88,863,333
Year 17	154,531,334
Year 18	149,163,799
Year 19	166,397,558
Year 20	222,791,396
Year 21	380,281,366
Year 22	491,897,743
Year 23	659,168,970
Year 24	585,682,838
Year 25	681,328,199

8 Conclusion and Recommendations

In view of the rapid increase in pension liability, USTB has to setup a Pension Fund so that pension payments can be financed directly from the Fund.

The funding of the Pension Fund is to be made through monthly contributions and budgetary allocations.

a) USTB may contribute to the Pension Fund at the rate of **32.6%** of the Pensionable salaries of the covered employees, in order to fund only future accrual of Pension Fund benefits.

To make up the existing Deficit in the Pension Fund of **PKR 432.600 million,** it is suggested that USTB may make annual contributions of **PKR 71.686 million** to the Fund, over the period of next ten years or annual contributions of **PKR 112.820 million** over the period of next five years. This assumes that the average return on the Fund will not be less than **11.75%**.

b) However, in lieu of the above mentioned contributions, USTB can make additional contribution to the Pension Fund at the rate of **15.9%** of the Pensionable salaries of the covered employees, to fund the future accrual and existing deficit of Pension Benefits in the Fund. Therefore the total required contribution rate work out to **48.5%** of the Pensionable salaries of the covered employees, to fund the future accrual of Pension Benefits and existing Deficit in the Fund.

The investments of the Pension Fund are to be made by USTB after taking into account the investment restrictions imposed by SECP and Income Tax Laws as summarized is annexure B.

The actuarial liabilities and future funding costs are determined using various financial and demographic assumptions which change over time. Since the actuarial liabilities of Defined Benefit Pension Funds are highly sensitive to these assumptions, therefore, regular actuarial valuations of such Funds are recommended to be conducted to determine their solvency levels and devise future funding strategies.

It will be a pleasure for us to answer any questions on any aspect of this Report, or to provide explanations or further details as may be appropriate.

Thanks for all the cooperation provided in the preparation of this Report.

Ch. Mohammad Anwar, FIA, FLMI
Chief Executive Officer and Senior Actuary

Annexure A

Plan Provisions

We have used and relied on the Pension Benefit plan provisions, supplied by USTB and are summarized below:

USTB is solely responsible for the validity, accuracy and comprehensiveness of this information. If any plan provisions supplied are not accurate and complete, the valuation results may differ significantly from the results that would be obtained with accurate and complete information.

Following is a summary of the benefits payable from the Pension Scheme:

- The Normal Retirement Age is 60 years.
- Early retirement is possible after 25 years of service.
- No benefit will be paid if service is less than 5 years.
- On Normal Retirement at age 60 if service is greater than 5 but less than 10 years, a lump sum gratuity will be paid which is last drawn pensionable pay multiplied by pensionable service.
- Minimum qualifying service for Pension on normal retirement or death in service is 10 years.
- Monthly Pension will be calculated as follow:
  Last drawn monthly Basic Pay multiplied by 7/300 multiplied by the number of years of pensionable service completed, subject to a maximum of 30 years of service.
  The net effect will be that for 30 years of service, Monthly Pension will be 70% of the last drawn pensionable pay.
- No Benefit will be paid on termination as a result of disciplinary proceedings.
- The employee can opt for commutation of up to 35% of his gross pension for a lump sum, at any time at or after retirement. The amount of the lump sum for each rupee of pension commuted will depend on the age at commutation, according to an age-wise scale prescribed. According to the current commutation table, the factor for age 60 next birthday is 12.3719. If the employee applies for commutation while in service within one year of the date of retirement he is allowed the commuted value using the factor for age 60 next birthday.

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

- On death in service before 10 years' of service but after at least 5 years, Gratuity of 1.5 month's last drawn pensionable pay, for each year of service will be paid to the heirs.

- On death while in service, having completed at least 10 years of service, Gratuity in lieu of 25% of the gross pension will be payable to the heirs. Gratuity will be calculated using the commutation factor applicable to the deceased employee's age next birthday at death. In addition, the widow will get a family pension of 75% of the Gross Pension for life or till her remarriage. In the case of the widow's death, the Family Pension will be paid to the sons until age 21 or the daughters till their marriage or attainment of age 21, whichever is earlier.

- On death after retirement of the pensioner, Family Pension of 75% of the deceased employee's pension after surrender or commutation will be paid to the widow or the sons or unmarried daughters under 21.

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

As announced by the Federal Government, Net Pension amount is indexed immediately by 15%, 10%, 10% and 7.5%. This gives an effective increase of 49.58% for new pensioners.

Annexure B

Investment Avenues currently available for approved retirement funds.

All money contributed to an approved superannuation fund and interest on the accumulated balance of such contributions, if any, can be invested in accordance with the provisions of sub-rule (1) of rule 102 of Income Tax Rules 2002.

The investments which are currently available for approved retirement funds are as follow:

- 100 % of the Fund can be deposited in **Scheduled Bank Schemes**
- 100 % of the Fund can be invested in **Govt. Securities, IPOs by the Federal Government**
- 100 % of the Fund can be invested in bonds, redeemable capital, debt securities or instruments issued by **WAPDA**
- 100 % of the Fund can be invested in **National Investment Trust Units**
- 20 % of the Fund can be invested in Schemes of **Established Financial Institutions**
- 30 % of the Fund can be invested in **listed securities, Stocks and Term Finance Certificates** subject to the limits and conditions prescribed below.
- 50 % of the Fund can be invested in **Listed Unit Trust Schemes** subject to the limits and conditions prescribed below.

Securities and Exchange Commission of Pakistan ("SECP") notified the Employees‟ Provident Fund (Investment in Listed Securities) Rules, 2016. These Rules also apply to Pension Funds.

Summary of these rules is as follow:

Where it is decided to make investment, out of the superannuation fund constituted for the employees of a Company, in securities of the companies listed on stock exchange in Pakistan, such investment shall be subject to the following conditions:

i. Total investment in listed securities should not exceed 30% of the fund.
ii. Investment in shares or other listed securities of a particular Company should not exceed five per cent of its paid up capital.
iii. In the case of investment in the shares of listed companies, it should be made only where such companies:
    a. have a minimum operational record of five years
    b. have exhibited average total return on total investment not less than prevailing risk free rate defined as the rate on which 6 months T-Bill are issued +50 basis point at the time of investment.
iv. Where investment is made in listed debt securities of a Company, it should not be made unless such securities have been assigned a minimum rating of "AA" by a credit rating Company registered with the commission under credit rating companies' rules, 1995, and with at least a stable outlook at the time of investment.
v. Where investment is made in collective investment schemes which may invest in listed debt securities, the investment policy of such scheme shall be in line with the criteria given in clause (ii);
vi. Where investment is made in listed money market collective investment schemes, it should be made only in those money market schemes which have exhibited average total return on investment, not less than prevailing risk free rate defined as the rate on which 6 months T-Bill are issued at the time of investment.
vii. Where investment is made in listed equity collective investment schemes other than money market collective investment schemes, it should be made only in the units of the

scheme which have exhibited average total return on investment, not less than prevailing risk free rate defined as the rate on which 6 months T-Bill are issued +50 basis point at the time of investment;

viii. The aggregate investment in listed equity securities of a particular Company should be restricted to ten percent of the size of the employees'' provident fund or five percent of the paid up capital of the investee Company whichever is lower.

ix. The aggregate investment in listed debt securities of a particular Company should be restricted to ten percent of the size of the employees' provident fund or five percent of that issue, whichever is lower.

x. The aggregate investment in listed equity securities of constituting Company or its associated companies out of employees' provident fund should not exceed five percent of the size of the employees' provident fund;

xi. The aggregate investment in listed debt securities of constituting Company or its associated companies out of employees' provident fund should not exceed five percent of the employees' provident fund.

xii. The aggregate investment in money market listed collective investment schemes managed by a single asset management Company shall be restricted to twenty percent of the size of the employees' provident fund.

xiii. The aggregate investment in any single listed equity collective investment scheme should not exceed ten percent of the size of the employees' provident fund.

xiv. The aggregate investment in initial public offers (IPO) of equity securities shall be restricted to five percent of the size of the employees' provident fund every six months in a calendar year subject to the following conditions:

xv. The aggregate investment in one IPO of equity securities shall be restricted to one percent of paid-up capital of the investee Company or two percent of the size of the employees' provident funds whichever is lower.

xvi. Investment in IPO of equity securities out of the employees' provident fund shall be made in companies having profitable operational record of at least three years.

xvii. Employees' provident fund shall not subscribe to an IPO of equity securities underwritten, co-underwritten or sub-underwritten by its associated companies or associated undertakings.

xviii. Investment should not be made in a listed security if issuer of the security has defaulted any of its financial obligations and in listed security of such Company which is on the defaulter segment of Pakistan Stock Exchange.

xix. The employees' provident fund shall develop and maintain appropriate investment policies explaining investment limit, investment avenues and risk appetite including but not limited to business allocation among the brokers. Moreover, the employees' provident fund should invest in liquid securities and refrain from activities including day trading, investment in future markets (except spread transactions) and investment in securities either through borrowing or through leverage.

Annexure C

Risks associated with Defined Pension Benefit Plans

Through its defined Pension Benefit Plan, USTB is exposed to a number of risks, the most significant of which are detailed below:

- Discount rate risk

The risk of changes in discount rate, since discount rate is based on corporate/government bonds, any decrease in bond yields will increase plan liabilities.

- Salary increase / inflation risk

The risk that the actual salary increase are higher than the expected salary increase, where benefits are linked with final salary at the time of cessation of service, is likely to have an impact on liability.

- Pension increase

The risk that the actual pension increase are higher than the expected, where benefits are being paid in form of monthly pension, is likely to have an impact on liability.

- Mortality risk

The risk that the actual mortality experience is lighter than that of expected i.e. the actual life expectancy is longer than assumed.

- Withdrawal risk

The risk of actual withdrawals experience may different from that assumed in the calculation.