
EMPLOYEES' PENSION SCHEME, 1995

11TH VALUATION REPORT

AS ON 31ST MARCH 2007

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ACTUARY.**

EMPLOYESSS' PENSION SCHEME, 1995

REPORT OF ACTUARIAL VALUATION
AS ON 31ST MARCH, 2007

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Report of Actuarial Valuation as on 31 March 2007 of
EMPLOYEE PENSIONS SCHEME, 1995

1. Introduction

1.1 I have been requested by EPF Organization vide reference letter dated 19th February 2010 to carry out valuation of EPS 95 as on 31 March 2007, 2008 and 2009 and submit the report.

1.2 The purpose of valuation is to value the assets and liabilities of EPS '95, review the rate of contribution and quantum of pension and other benefits and to determine the surplus/deficit of the EPS fund and in case of surplus recommend the rate of discretionary additions to the basic pension payable for the valuation period.

1.3 The valuation is being made pursuant to section 32 of EPS '95 Scheme.

1.4 Current valuation is made as on 31 March 2007. Previous annual valuation was made as on 31 March 2006.

2 Executive Summary of 11th Valuation Report As On 31st March, 2007

I have completed the valuation of assets and liabilities of EPS '95 as on 31st March, 2007 for which data of members and pensioners were made available.

2.1. Members and Pensioners

Of the 3,57,30,290 members of the Scheme as on 31st March, '07 individual member data was provided for 2,12,99,959 members. Out of this data, only data in respect of 69,34,956 members were found consistent and out of this on removal of duplicate records only 17,48,153 records were useable for valuation calculations. Efforts to supplement more data complete in all respects were not successful.

As for Pensioners, data in respect of 12,54,914 (out of actual number 15,92,879 and 6,47,920 beneficiary pensioners (out of actual number 10,60,302) were provided to determine all Pensioners' liability.

With the limitation in data availability (very severe in respect of current members) as mentioned above, valuation of liability of the Pension Scheme had to be projected to arrive at an estimate based on actual valuation using available data and assumptions on demographic and economic factors considered reasonable and appropriate to the Scheme. Owing to data constraint there is an element of uncertainty as to the value of total liability of the Scheme and the resultant financial position of EPS'95 Fund.

2.2 Receipts and Payments and assets of the Scheme

During the inter-valuation period, 1 04 2006 to 31 03 2007 contribution income was Rs. 8050.66 Cr. investment income was Rs. 6069.49 Cr and total benefit outgo being Rs.3647.24 Cr.. As a result the Fund increased to Rs.83837.66 Cr as on 31st March, 2007.

The assets of the Scheme as on 31st March, 2007 (Rs Cr) comprise Deposit in Public Account Rs. 32934.83Cr, investments in securities Rs. 50769.11 Cr and cash etc. Rs.133.72 Cr. The return on the assets was 8.04%during 2006-'07 The investments in Securities to a greater extent (80 %) have outstanding term to redemption / maturity of less than 10yrs with weighted average term of 7.4yrs. This is too short compared to average duration of emerging liabilities which is quite long. There is mismatch of duration of assets and liabilities exposing the Fund to mismatch risk and uncertainty of the rate of return .A review of investment management is recommended to streamline the same with clear objective to manage efficiently and effectively so as to optimize the returns having regard to asset liability matching requirement and also taking into consideration investment guidelines under National Pension Scheme regulated by PFRDA.

Consistent with the valuation of liability, assets were valued at Book Value

2.3. Valuation Basis

Assumptions have been made as judged reasonable and appropriate, having regard to the nature and term of the liabilities and assets and expected trend over the future of the elements forming the valuation basis.

Main assumptions:

Interest Rate: 8% for pre retirement period and 7% for post vesting period.

Salary increase: 6% p.a. during the period of service.

Withdrawals: Smoothed rates based on general industry experience.

Mortality Rates: Pre retirement: LIC assured lives Mortality Table (94-96)

Post vesting: LIC annuitants Mortality Table (96-98)

2.4 Valuation Results

Total value of liability in respect of current Members and Pensioners and Beneficiary Pensioners net of value of future contributions of current Members as per valuation projection including certain provisions is Rs. 1,24,956 cr. as on 31 st March,2007. The Scheme Fund as on that date is 83837cr. resulting in deficit of Rs.41,119 cr compared to

the deficit of Rs.22659 cr. as at 31st March 2006. The current deficit is the net effect of several factors, mainly:

- i. Increase in membership from 3,23,88,660 to 3,57,30,290 (of which new Entrants are 51,86,586--14.5%) and of pensioners from 23,24,991 to 26,53,181 and higher accrued liability of existing members but with inadequate contribution. (Increase in Liability).
- ii. The continuing effect of raised pensionable salary limit from Rs.5000/- to Rs.6500/- made effective for all members in the past without infusion of additional funds to meet the higher liabilities.
- iii. Valuation carried out using available data set and projected data set (to project to the total membership distributed as regards age, pensionable salary and past pensionable service similar to the corresponding characteristics of the limited records made available) and estimating liability based on these two valuation results.
- iv. Specific addition to the liability in respect of (a) employees where Employers' contribution was in arrears and (b) pension claims pending settlement.
- v. Inadequacy of contribution rate owing to changed economic scenario and membership behaviour especially related to exit from the scheme. (resulting in funding deficit).
- vi. Constraints on data quality and different characteristics of members' data as compared to the data provided for the previous valuation

Measures for corrective action are suggested in the following para.

2.5. Recommendations:

- a. Make one time lump sum contribution of Rs.41,120 Cr to Pension Fund. OR The existing contribution rate of 9.49% of pensionable salary (8.33% by Employer and 1.16% by the Government) will need to be raised to 13%. OR Achieve (with professional investment management) return on investment of not less than 9% p.a. over the future combined with increase in contribution rate by not less than 1%.
- b. Consider raising the superannuation age to 60 years from 58 years. However the effect on the Liability will depend on how the change will be structured, having regard to the expectation of members.
- c. Streamline investment management separating the assets supporting the liability of existing members' group from those of current pensioner group with clear objective to optimize returns having regard to assets-liability matching requirements and risk-reward consideration.
- d. Suitable mechanism to be put in place for effective control on contributions receivable and benefit outgo especially pensions.
- e. Large Scale improvements MUST be made as regards data maintenance and availability for periodical valuation. It is essential to make available data for 100% membership and pensioners and required individual data for new entrants/exits. To achieve this objective immediate steps are required to set up Statistical Section at the Head Quarters and the Regional Offices of EPFO

adequately manned with suitable skill set, supported by IT infrastructure, with responsibility to capture all required information correctly for every member and pensioner and update information periodically to serve the purposes of administration and valuation. .

- f. Any review of the Scheme (including measures (a) and (b) above) should be based on appropriate actuarial assessment with complete and consistent data made available for the purpose.

3. Statement of Benefits Valued (Sections' reference is to EPS'95 Scheme)

Superannuation pension (section 12 & 13)

Early retirement pension (section 12)

Disability pension (section 15)

Death Benefit (spouse's pension and children's pension/ Pension to nominees or parents) (section 16)

Withdrawal benefit (deferred pension/return of contributions) (section 12 & 14)

Current Pension (to member pensioners and beneficiary pensioners)

Details of various benefits applicable on the happening on certain contingencies are covered in sections (12) to (16) of the Scheme.

4. Membership

4.1 As per information available from EPFO, the number of members covered under the scheme as on 31 March 2006 was 3,23,88,660.

4.2 During the financial year 2006-07 there has been addition of new members joining the scheme and reduction in members to exit by way of death in service, superannuation, early retirement, withdrawals and there was net increase of 33,41,630 members resulting in total members increasing to 3,57,30,290 as on 31st March, 2007 as per details below.

4.3 Current Members

Table 1

Mode of exit/Entry	No of members 2006 - 07	No of members 2005 - 06
Death in service	35,382	41,172
Superannuation	91,438	1,25,902
Retirement	1,51,453	1,72,156
Disablement retirement	453	879
Withdrawals (with deferred pension) and Withdrawals (with return of contribution)	15,66,230	13,02,835
Total Exits	18,44,956	16,42,944
Total Membership net of exits	3,05,43,704	2,95,06,105
New members during the financial year	51,86,586	28,82,555
No of members as on 31 st March	3,57,30,290	3,23,88,660

4.4 Current Member Pensioners and Beneficiary Pensioners

On 31.03.06 there were 23,23,628 pensioners of different categories receiving pensions. The number of pensioners has increased to 26,53,181 as on 31.03.2007 as per details below.

Table 2

Category	As at 31.03.06	Additions 2006-07	Exits 2006- 07	As at 31.03.07
Member Pensioners	13,60,510	2,67,507	35,138	15,92,879
Widow(er) pensioners	5,12,110	49,598	11,204	5,50,504
Children Pensioners	4,40,607	72,815	29,557	4,83,865
Orphan Pensioners	10,401	2,674	1,177	11,898
Nominated/Current Pensioners	-	-	-	14,035
Total	23,23,628	3,92,594	77,076	26,53,181

The figures of additions in Table 2 when compared to exits in Table 1 (entering pensioner category) as reported by EPFO appear inconsistent.

5. Receipts and Payments

5.1 Receipts and Payments in respect of EPS'95 Fund for the financial year 2006-07 are given in Table 3 below

Table 3

Amounts in Rs Crore

Receipt	FY 06-07	FY 05-06	Payment	FY 06-07	FY 05-06
1. Opening Balance	73235.58	63805.70	Withdrawal/Retirement Benefit	1206.62	1024.19
2. (a) Contributions - Employers	6710.66	6135.45	Life Assurance benefit	1.84	0.36
2. (b) Contributions - Government	469.43	0.00	Pension	2324.23	1955.95
2. (c) Arrears by Government	870.57	750.00	Total benefits	3532.69	2980.50
Total contributions (2a + 2b + 2c)	8050.66	6885.45	Expenses	114.56	87.32
3. Interest on investments	6146.78	5634.21	Accrued Interest	77.39	86.00
4. Other receipts - contribution account	130.56	64.60	Other Payments	1.28	0.55
			Closing Balance	83837.66	73235.58
Total	87563.58	76389.95	Total	87563.58	76389.95

(Source: as per audited accounts)

(subject to rounding off error)

5.2 Statement of Assets

Table 4

Particulars	Amount in Rs.Crore	
	As on 31.03.07	As on 31.03.06
Deposits in Public Account	32934.83	29016.63
Central/State Government securities/PSU Bond & PSB FD	50769.10	44113.69
Cash/Remittance in transit	158.01	74.62
Total	83861.94	73204.94

(Source: as per audited accounts)

5.3 Inter-valuation period

During this inter-valuation period 01.04.06 to 31.03.07, 27214 new establishments were added to the EPFO resulting in additional membership to the Scheme of 51,86,586 persons including increase in membership of existing establishments.

The annual contribution (including Govt contribution and arrears) has increased from 6885.45cr (2005-'06) to Rs 8050.66 crs arising from net addition to membership (from entry of members from new establishments as well as addition of new members in existing covered establishments) and salary increases.

There has been no change in rates of contribution to EPF '95 during the inter-valuation period. Employer contribution continued to be made at 8.33% of pensionable salary and government contribution at 1.16% of pensionable salary (As a result of valuations in the past recommendation had been made to increase the contribution rate. At the previous valuation as on 31.03.06 recommendation included raising total contribution to 11.75%). During the inter valuation period 2006-'07 total income by way of contribution was Rs.8050.66 cr., investment income Rs.5946.78cr. and benefit outgo Rs.3432.69cr. The Fund has increased from Rs.73235.58cr. to Rs.83837.66cr.as on 31 March 2007.

6. Data for Valuation

6.1 Current Members

6.1.1 Data compiled from 80 offices in 26 regions of EPFO covering 2,12,99,959 members and from 75 offices (under 36 ROs) covering withdrawals with payment of cash benefit (cumulative for all years up to date) of 41,06,203 members, as on 31.03.07 were submitted for processing.

6.1.2 On removal of duplicates only 69,32,545 Records remained. On checking the data for completeness of all information required for calculation of the liability for pension, death benefit, and withdrawal payment to current members, only 17,60,313 individual

data records of members were found useful. After consistency check 17,48,153 member data could be used for making valuation of liability. High volume of data did not contain basic information like date of birth, date of joining FPS/EPS, pensionable salary etc. I was given to understand that there was no scope for completing the blank fields in the rest of the (incomplete) data provided, though essential.

6.1.3 I have drawn the attention of EPFO orally and in writing and talked to RPFC –I (Pension) with a view to mitigate the data constraint to some extent. EPFO vide its communication Ref. No: Actuarial/18(3)2008/13142 dt.21st Sept.2011 informed that I have to complete the valuation exercise with the data constraint explained above.

6.1.4 As against 357.30 lakh active members of EPS '95 as on 31.03.07 useable data for valuation (17.48 lakh) is 4.89%. Representativeness of data processed for valuation is unknown and in projecting the liability for the actual number of members based on this small volume of data results in greater uncertainty of the actual liability. In making the projection there is implicit assumption that the member profile especially as to actual distribution by age, service and pensionable salary and by gender and marital status of members is no different from what the valuation data file represents.

6.2 Current Pensioners

6.2.1 Member pensioners data found complete for valuation covers 12,54,914 pensioners and compared to actual pensioners 15,92,879 (79% of actual numbers). Beneficiary pensioners data found complete for valuation covers 6,12,549 pensioners as against actual number 10,60,302 (58% of actual numbers).

6.2.2 Based on data valued, liability for actual number of current member pensioners and beneficiary pensioners has been projected. In the process, there is implicit assumption that distribution by age, gender, amount of pension and pension option exercised of the data set represents and replicates the characteristics of the class of actual pensioner group. This results in some extent of uncertainty in value of actual liability though the probability of large deviation is much lower as compared to liability determined in respect of current members.

6.3 Exit Members

6.3.1 In terms of the EPS '95 in respect of members who withdraw from the scheme on resignation with scheme certificate or eligibility for deferred pension, liability for deferred pension needs to be determined for those surviving as on each valuation data. The actual number of such members is not available. Members for which data are made available are considered and deferred pension liability is calculated and included in the liability for withdrawals benefit.

6.4.1 I have relied completely on EPFO as to correctness of the data provided and applied valuation checks to remove inconsistent data. Based on the processing of validated data the following average parameters emerge:

Average age of Members: 35.75 yrs
Average past service in EPS'95: 6.09 yrs
Average pensionable salary (p.m): Rs 3208

6.4.2 In the absence of information on the above for the total membership, consistency of valuation data set could not be checked, though found on average measurement basis consistent with similar parameters arising in the last valuation except as regards average pensionable salary which currently happens to be higher by 15% .This apart, distribution of number of members by age attained, and past pensionable service and proportion of total pensionable salary at each age based on current valuation data differs with that based on data used for previous valuation. This will result in variation in valuation results and lack of consistency in results when compared to previous valuation.

7. Experience Analysis

7.1 A valuing actuary is required to analyze the actual experience as regards the demographic and economic factors forming the basis for determining the liability since the last valuation, so as to take note of any significant changes and accordingly consider changes in any of the factors to be made for current valuation of liabilities.

The factors are:

7.2 Demographic factors:

1. Mortality rate of current members
2. Mortality rate of current pensioners
3. early retirement rate (including disablement)
4. superannuation rate
5. other exits (withdrawals)

7.3 Economic factors:

1. Rate of interest
2. Rate of salary increase including inflation

7.4 No data has been made available with required information (as not maintained) to enable analysis of experience related to demographic factors and salary increases, to be carried out.

8. Funding Objective

Funding objective is to ensure that the EPS '95 fund is solvent i.e. there are adequate assets to meet the pension benefits of the scheme to all eligible pensioners and accrued pension liabilities of current members and further that the contribution rate is adequate to meet the emerging pension benefits of all members and beneficiaries.

Contribution rate of 8.33% of pensionable salary by employer and 1.16% of pensionable salary by government remain without change since inception of the scheme though

changes in the rules of the scheme (like pension salary cap increase) in the nature of effectively improving applicable pension amounts were made with significant impact on the liability (resulting in inadequacy of the contribution rate and deficit in the fund) as revealed in the reports of past valuations.

9. Methodology for valuation

9.1 The Aggregate method is used. It values all benefits for active members. The actuarial liability is based on the total benefits expected to be awarded taking into account both pensionable service accrued up to valuation date and potential service after that date. Allowance is made for contributions to be paid after the valuation date at the level of contribution rate fixed for the Employer and the Government.

9.2 The actuarial liability as at the valuation date is calculated taking into account all types of decrements- death in service, early withdrawal with or without scheme certificate, early and superannuation retirement. In such calculations (including calculation of present value of contributions payable) pensionable pay is projected from valuation date up to the assumed date of retirement date of leaving service or date of death (and dates of payment of contribution) as appropriate. Allowance is made both for general increase in pay and also for career progression.

9.3 The amount of benefits payable on various contingencies arising after valuation date including allowance made for contributions receivable is discounted to the valuation date to calculate present value of liability of active members. Deferred pension liability in respect of members who left service early prior to valuation date is calculated allowing for contingencies of death and retirement and discounted to the valuation date.

9.4 Actuarial liability in respect of Member Pensioners and Beneficiary Pensioners is based on the pension amount drawn on valuation date allowing for contingencies as applicable (i.e. death, remarriage, termination of benefits as per Rules of the Scheme for children) and discounted to the valuation date.

10. Valuation Basis

10.1 Demographic Factors

Considering the size of membership of the scheme and pensioners and beneficiaries maintenance of required data (complete and accurate) on continuing scale would have facilitated in experience analysis being made for the scheme relating to mortality rate, withdrawal rate, early retirement rate, disablement rate and mortality rate of member pensioners and beneficiary pensioners and thus serve as a base for assumptions on these factors for the future. There is no mechanism in EPFO to ensure such data maintenance and there is a lack of information to base assumptions on the scheme experience. I have considered the profile of membership of the scheme which has a mix of industries - small, medium and large establishments, unskilled, semi-skilled and skilled workers, and

administrative employees spread over the country, aggregate exit information as provided by the office. I have also considered published table especially of mortality of assured life, annuitants of LIC and industry experience of withdrawals and early retirements. Having regard to the above considerations I have used my best judgment to arrive at the assumptions, as under:

10.1.1 Mortality rate of current members:

Latest available published table of assured lives is LIC 94-96. More than 10 years has elapsed since then and the overall trend in mortality is improvement in survival rates (reducing death rates). However having regard to class of lives covered in the scheme (mentioned above) I consider it is appropriate to use LIC 94-96 mortality table without adjustment (effectively considering higher mortality rates compared to latest trends). Refer annexure for mortality rates.

10.1.2 Mortality rate of pensioners and beneficiary pensioners:

In the absence of information on the scheme experience, I have used LIC annuitants table LIC (96-98) (as mentioned in the annexure) being a standard published mortality table and more reliable at ages above 60 yrs.

10.1.3 Retirement Rates

Having regard to the nature of establishment where the members are employed and limited information on age wise retirements indicative of trend and overall industry experience I have provided for early retirements at 10% at age 50, 6% at age 51, 8% at age 57 and uniformly at 4% between age 52 to 56.

10.1.4 Withdrawal Rates

In the absence of experience data from the Scheme, based on overall industry experience and the nature of establishments where members are employed I have used withdrawal rates as mentioned in annexure

10.2 Economic Assumptions

10.2.1 Interest Rate

10.2.1.1 The assets of the pension scheme as on 31.03.07 comprise of deposit in public account (39.27%) on which the government credit interest on fixed rate of 8.5% pa and investment in securities in central government, state government and PSUs of short, medium and long term and fixed deposits of short/medium term (60.54%) carrying coupon/interest rate respectively at different rates. Cash and remittance in transit accounts for the balance of assets i.e. 0.19%

10.2.1.2 The return on the assets (calculated using total earnings on the assets and using average assets during the accounting year) was 8.04% during 2006-07(8.44% during 2005-06)

10.2.1.3 In determining the rate of interest for valuation of liabilities, while return on existing assets is kept in view, the return expected on reinvestment of maturing securities in the future needs to be taken into account. Besides return expected on the investment of the excess funds over payment of the pension scheme in the future is on important factors. The interest on deposits in public account currently stands at 8.5% pa while in the immediate future it may be assumed to continue as this rate, there could be a review in future aligned to government's fiscal policy leading to lower rate of interest on such deposits in public account.

10.2.1.4 The return on investments in government securities and PSU securities and fixed deposits of PSU banks are subject to fluctuations in future because of influence of market forces. The trend as Indian economic factors indicate is lower rate of interest over the long term in the future.

There is one Fund for the EPS'95 the assets of which cover the prospective pension liability of current members as well as pension outgo for current pensioners. While liability duration for current members is quite long, for current pensioners' liability duration is short as there is immediate cash outgo year to year implicitly involving disinvestment of assets supporting this liability. Even in the existing context of all assets being in a single Fund it would entail investments in shorter term securities to the extent required to meet the asset matching requirement for Pensioners' liability. As a continuing scheme using current income flow to meet the current pension outgo implies inter generation transfer of assets covering liability of the current members to current pensioner group with consequent opportunity cost devolving on current members (reflecting in lower returns on the invested assets of this group)

10.2.1.5 Further in respect of current members pension vests on superannuation/ early retirement which is at a more distant future. Determination of post vesting Pension liability involves using an interest rate to discount the vested pension for lifetime to the valuation date. Being a long distant future time uncertainty increases as to the rate of return to be expected and this risk should be appropriately reflected in deciding rate of interest to discount post vesting liability of current members.

10.2.1.6 For the above reason as a matter of prudence it is required to use a lower discount rate for valuing liability of current pensioners and post vesting pension cost of current members.

10.2.1.7 Going by the current position of investment applicable to pension scheme (all of fixed interest types), having regard to the above considerations I consider valuation rate of interest of 8% during contributory service of members and 7% during pension payment period would not be unreasonable. This rate may need to be reviewed in the future valuation depending on the investment scenario as it emerges having regard to asset-liability matching requirement of the Scheme.

10.2.2 Salary Increases

No data with required information is available to study the trend of increase in pensionable salary of members. As mentioned in earlier sections of this report, I considered the type of establishments covered, the profile of employees and skills sets, the movement in average pensionable salary on aggregate basis and a sample study of age and salary distribution over recent two year period as per the data provided and relevant general experience as regards salary increases. Having regard to the above factors and based on my discussion with EPFO, in my view salary increase at 6% p.a over the future would not be inappropriate. Accordingly I have assumed salary increase at 6% pa over the future.

10.3 Other Assumption

There are elements which include proportion married, age difference of member and spouse, number of children and their ages, remarriage rates which need consideration in the valuation liabilities. There is no data relating to the scheme to give indication of the experience on the above elements. I have considered the assumption made in the previous valuation and related information from general population and allowed for this broadly. These assumptions have a minor effect only on the valuation of liabilities.

10.4 Valuation of Assets

10.4.1 Assets include Deposits in Public Account Rs.32934.83 cr (which is credited with fixed rate of interest decided by the Central Government) and investments in Securities Rs. 50769.10 cr which portfolio is managed by SBI (Fund Manager).

*Investments comprise Central government securities (36.88%) State Govt. Securities (3.36%), State Govt. Development loans guaranteed by State Govt. (20.69%) and Bonds and Fixed Deposits in Public Financial Institutions (39.07%). These investments carry different coupon rates/ interest rates and varying terms short/ medium/ long.

(* Percentage based on statement of category wise investments at Face Value and interest earning rate of EPS'95 Investment holdings as on 31 03 2007)

10.4.2 Of the invested Securities (Rs. 50769.10 cr) 34% mature within 5 years, 44% between 6 to 10 years, 12% between 11 to 15 years and the rest beyond 15 years, the last maturity year being 2037.

10.4.3 Weighted Average Term of these Securities (face value wise) is 7.8 years. This average duration is too short compared to the average duration of emerging pension liabilities of current members which is quite long taking into account the future the service years and lifetime thereafter. This indicates duration mismatch of assets to liabilities which exposes the Fund to the uncertainty of interest rate risk and mismatch risk.

10.4.4 Assets of the Fund are taken on book value basis for the valuation purposes consistent with valuation liabilities.

10.5 Valuation Basis

No changes are made to assumptions since previous valuation. The basis is as under:

Table 5

Elements	Current
Mortality rates - members	LIC 94-96
Mortality rate - pensioners	LIC 96-98
Interest rate	8% pre retirement period and 7% post retirement period
Salary Increase	6%
Withdrawal rates	Industry experience (smoothed rates)

11. Amendments to EPS '95 Scheme

11.1 Govt. of India had issued the following amendments effective from date of publication:

1) Gazette Notification No. G.S.R 431(E) dated 15th June, 2007. The eligible service for superannuation / early retirement pension has been changed to minimum 10 yrs (as against 20 yrs) subject to retirement at the age provided in the Scheme.

2) Gazette Notification No. G.S.R 438(E) dated 9th June, 2008.

Table B giving factors for computation of past service benefit under the ceased Family Pension Scheme for existing members on exit from employment and Table D giving factors for return of contribution on exit from employment have been revised downwards.

3) Gazette Notification No. G.S.R 688(E) dated 26th September, 2008. Para 12 A and 13 of EPS, '95 have been deleted (in effect benefit of commutation and Return of Capital are totally removed for all pensions where commencement of pension is on or after 26th September, 2008 and reduction factor for early retirement pension has been increased from 3% to 4% with effect from 26th September, 2008.

11.2 Though the valuation exercise is carried out as on 31st March, 2007 the above amendments will have impact on value of retirement and other benefits payable on and from the effective date to current members including Family Pension part applicable to those current members who were covered by FPS, 1971. I have, therefore allowed for the revised scheme provisions as applicable from 1st April of the year following the specified effective date and existing scheme provisions till then.

12. Valuation results & Observations

12.1 Based on the assumptions mentioned in the earlier paragraphs, the actuarial liability was calculated using the limited volume of data (17,48,153 records) of active members.

Based on the distribution of this data according to age, past service and pensionable salary projected grouped data age wise for the total members on the valuation date (3,57,30,290) were derived giving estimated number of members and total pensionable salary for each age group subdivided into completed pensionable service. Whereas total active members on valuation date is available in the Annual report of the Scheme there is no information on the total pensionable salary for the total membership. Therefore the total pensionable salary was derived based on the amount of contribution income for the financial year 2006-07 as per audited accounts and the rate of contribution by Employer (8 1/3%) with adjustment for arrears of contribution. On this grouped data actuarial liability was calculated on the same valuation assumptions as applied to actual data set. There is significant variation in estimated liability of current members based on valuation of actual data set and that based on projected data set.

12.2 It is not known how far the data set valued is representative of the total membership of the Scheme. Therefore, neither the estimation based on the results of actual data set nor the valuation results based on the derived grouped data of members (which has inherent limitation as a grouped data) could be taken as the actuarial liability in respect of members in service .Keeping in view overall consistency of certain practical valuation ratios for the different benefits I have blended the valuation calculations of these two sets of valuations as considered appropriate in my view to determine the estimated final actuarial liability for active members. In this respect the estimated liability for current members is not comparable with the corresponding estimate made at previous valuation as at 31 03 2006.

12.3 The volume of valuation data for Member Pensioners and Beneficiary Pensioners being a higher proportion of actual numbers, the final liability was projected based on the Valuation calculations and annual outgo on Pensions allowing for adjustment for arrears of Pension payment as available in the Annual Accounts and Report of EPS'95 Scheme The valuation results are given in the Table below.

Valuation Results

Table 6 (see next page)

Table 6

Amount in Rs.Crore

	Assets		Liabilities s)
Scheme assets	83837	Current members	
Value of future contributions	110092	(a) Pension benefits	159163
		(b) Death benefit	17892
		(c) Withdrawal benefit (including members left with scheme certificate)	33915
		(d) Current Pensioners and beneficiaries	22038
		(e) Expense of administration	990
Deficit	41119	Reserves for inaccuracy in data	1050
Total	235048	Total	235048

Note: Future Expenses of Pension Administration are provided at 0.7% of value of future contribution plus 1% of liability of current pensioners and beneficiary pensioners. Reserves for inaccuracy in data is provided at 0.5% of value of benefits of current members. Actual provision required could vary depending on the extent of inaccuracy.

12.4 Total value of liability in respect of active Members, Pensioners and Beneficiary Pensioners net of value of future contributions of current Members as per valuation projection is Rs.1,24,956 Cr.as on 31st March 2007.The Scheme Fund as on that date is Rs.83,837 Cr. resulting in deficit of Rs.41,119 Cr compared to Rs.22,659 Cr. as at 31st March 2006.

12.5 The current deficit is the net effect of several factors ,mainly:

- i. Increase in membership from 3,23,88,660 to 3,57,30,290 (of which new Entrants are 51,86,586--14.5%) and of pensioners from 23,24,991 to 26,53,181and higher accrued liability of existing members but with inadequate contribution. (Increase in Liability).
- ii. The continuing effect of raised pensionable salary limit fromRs.5000/- to Rs.6500/- made effective for all members in the past without infusion of additional funds to meet the higher liabilities.
- iii. Modified approach to determine valuation liability using results of valuation carried out using available data to project to the total membership distributed as regards age, pensionable salary and past pensionable service similar to the corresponding characteristics of the limited records made available and estimation of valuation results based on the valuation calculations of actual (limited) data set provided and projected data set.(ref:section 12.2)

- iv. Specific addition to the liability in respect of employees where Employers' contribution was in arrears and also for pension claims pending settlement.
 - v. Inadequacy of contribution rate owing to changed economic scenario and membership behaviour especially related to exit from the scheme .(resulting in funding deficit)
 - vi. Constraints on data quality and different characteristics of members' data as compared to the data provided for the previous valuation.
- 12.6 Given the quality and too low a proportion of valid data made available for valuation the above results have limitations and could be a broad indication of financial position of EPS'95 as obtaining on the date of valuation .The possibility of firmer conclusion on the extent of deficit in the Fund will be enhanced if complete and accurate data of a greater proportion of total members representing the total membership and the class of Pensioners and Beneficiary Pensioners covered by the Scheme are provided to carry out valuation of liability as also the required individual data of New Entrants and all Exits , to make experience analysis.

12.7 Sensitivity of Valuation results

Valuation results are particularly sensitive to assumptions on interest rates, salary increase rate, mortality rates and withdrawal rates as illustrated below.

S.No	Change in valuation basis	Change in liability
1.	Interest rate falls 0.5% (from 8% to 7.5% in pre retirement)/ (7% to 6.5% post vesting)	+10.68%
2.	Interest rate rises 0.5%(from 8% to 8.5%in pre retirement/ 7% to 7.5% post vesting)	(-)9.85%
3.	Salary rate rises by 10% (from 6% to 6.6%)	+2.86%
4.	In service mortality rates lower by 20%	(-)1.12%
5.	Withdrawal rates rise 50%	+7.38%

13. Recommendations

1. Make one time lump sum contribution of **Rs.41120 Cr.** to the Pension Fund to make good the deficit

OR

As the current contribution rate of 9.49% of pensionable salary (Employers' 8.33% & Govt. 1.16%) is inadequate revise the rate upwards to **13%** for the existing members so that the deficit is met by higher future contribution.

OR

Achieve (through professional investment management) return on investment of **not less than 9% p.a** over the future combined with increase in contribution rate (for existing members) of **not less than 1%**.

(Before taking any decision with respect to the above recommendation an actuarial valuation based on **truly representative data of adequate volume and quality** is necessary to assess the deficit with a greater degree of certainty)

2. **Consider raising the superannuation age to 60 years from 58 years** However the effect on the liability will depend on how the change will be structured, having regard to the expectation of members.

3. Investment Management

Investment of funds needs to be separated for assets supporting liability of current pensioners (including beneficiary pensioners) from those of members in service (for the reasons stated in section 10.2.1.4) and further to be streamlined with clear objectives to manage efficiently and effectively having regard to Asset-Liability matching requirements of the two groups (viz members in service and current Pensioners) and optimizing returns on investment to meet the expectation of Scheme members and Pensioners..

The Fund assets are wholly invested in fixed interest instruments. The pension benefits of the Scheme being in real terms (related to salary) though mitigated to some extent by pensionable salary cap of Rs.6500 p.m. it makes sense to invest in real assets like Equities (with prudent investment policy approved by Trustees) as these assets over a long term provide higher returns through dividend income and capital appreciation over fixed interest securities and match the real time cost of Defined Benefit liability and could also give rise to surplus in the fund which may be utilized to meet the expectation of pension increases. It may be worth reviewing the investment strategy for the Pension Fund in light of investment regulations/ guidelines proposed for NPS by PFRDA.

Even within the portfolio of fixed interest securities inclusion of investment in Rated Corporate Bonds/ Debentures and limited trading in Govt. securities will help improve the returns as borne out by the experience of LIC in its management of insurance funds.

4. Control on Fund inflows and outflows

It is not known what process is in place to exercise control on the contribution receivable towards the Pension Scheme from employers in respect of every employee enrolled into the Scheme and if there are gaps in contribution(which need to be treated as

provided in the Rules of the Scheme) as this is relevant for allowing past service credit. A comprehensive and properly designed electronic data File relating to every member, Pensioner and beneficiaries capturing basic information (including contribution) required for administration of the Scheme and periodical actuarial valuation, needs to be created and maintained.

There is need to review the procedure to ensure timely reporting and recording of death of pensioners and beneficiaries as the related control statistics indicate otherwise (which could distort experience analysis).

5. One time exercise needs to be undertaken with simultaneous **setting up of Statistical Section at HQ and all Regional Offices** to complete data entry of all physical forms of existing members received at point of entry into the Scheme, initiate validation process to capture missing data. (A separate Note on the set up and functions of Statistical Section is appended). This needs to be time bound so that future valuation may be carried out with substantial volume of complete, accurate and consistent data the results of which would enable drawing firm conclusions on the financial position of the Pension Scheme emerging based on which appropriate review of contribution and benefits could be made.

6. **Any improvement to the provision of benefits** like increasing the pensionable salary cap (from the existing limit of Rs. 6500) should be considered **only after investigation of the financial position of the scheme and evaluation through actuarial valuation.**

14. Reliance and limitations

14.1 In producing this report I have relied upon data in CDs and information, both written and verbal, supplied by the officials of EPFO HQ. I relied upon the general completeness and accuracy of this information without independent verification. The accuracy of the results presented in this report is dependent on the accuracy of data and information.

14.2 I have reviewed the data for valuation provided for overall reasonableness and consistency with my knowledge of the EPS'95 and I have not carried out independent checks of the data supplied to me. The conclusions set out in this report are dependent on the accuracy and completeness of the information provided to me and constrained by the limitation of data provided. This report and the opinions and conclusions are for the internal use of EPFO only.

14.3 This report has been prepared on the basis as set out in the report and its annexure. Judgments as to the information contained in the report should be made only after studying the report in its entirety as it may be inappropriate to draw conclusions by review of a section or sections on isolated basis.

14.4 Actual future results will vary from this report as the results of the valuation have been based on limited data made available and certain assumptions and parameters. Supply of higher volume of complete accurate and consistent data as also deviations from these assumptions and parameters could alter the results significantly. These assumptions

and parameters include those which may be influenced by the decisions of the Trustees of EPS'95 Fund (like change of rules of the Scheme) and external factors such as inflation rates, investment yields and general economic environment.

14.5 The assumptions and parameters and valuation of the Scheme are made on 'continuing scheme' basis.

Dated 14th October,2011

P.A.BALASUBRAMANIAN

(Fellow of Institute of Actuaries of India)
(M.No.8)

ASSURED LIVES' MORTALITY

Annexure-(1)

LIC 94-96

Age	Deaths per million	Age	Deaths per million	Age	Deaths per million
14	713	43	2602	72	45392
15	770	44	2832	73	50639
16	823	45	3110	74	56404
17	873	46	3438	75	62728
18	919	47	3816	76	69655
19	961	48	4243	77	77231
20	999	49	4719	78	85502
21	1033	50	5244	79	94519
22	1063	51	5819	80	104331
23	1090	52	6443	81	114992
24	1113	53	7116	82	126553
25	1132	54	7839	83	139067
26	1147	55	8611	84	151077
27	1159	56	9433	85	162298
28	1166	57	10294	86	174149
29	1170	58	11025	87	186638
30	1170	59	11951	88	199775
31	1171	60	13073	89	213560
32	1201	61	14391	90	227995
33	1246	62	15904	91	243072
34	1308	63	17612	92	258782
35	1387	64	19516	93	275109
36	1482	65	21615	94	292031
37	1593	66	22724	95	309522
38	1721	67	25617	96	327549
39	1865	68	28823	97	346073
40	2053	69	32372	98	365052
41	2247	70	36294	99	384436
42	2418	71	40623		

ANNUITANTS' MORTALITY
LIC 96-98 EXPERIENCE

Annexure-2

AGE	Deaths per million	AGE	Deaths per million	AGE	Deaths per million
20	919	51	4719	81	77335
21	961	52	5386	82	84210
22	999	53	6058	83	91428
23	1033	54	6730	84	98988
24	1063	55	7401	85	106891
25	1090	56	8069	86	115136
26	1113	57	8710	87	123723
27	1132	58	9397	88	132652
28	1147	59	10130	89	141924
29	1159	60	10907	90	151539
30	1166	61	11721	91	161495
31	1170	62	11750	92	171794
32	1170	63	12120	93	182436
33	1171	64	12833	94	193419
34	1201	65	13889	95	204746
35	1246	66	15286	96	216414
36	1308	67	17026	97	228425
37	1387	68	19109	98	240778
38	1482	69	21534	99	253473
39	1593	70	24301	100	266511
40	1721	71	27410	101	279892
41	1865	72	30862	102	293614
42	2053	73	34656	103	307679
43	2247	74	38793	104	322087
44	2418	75	43272	105	336836
45	2602	76	48093	106	351928
46	2832	77	53257	107	367363
47	3110	78	58763	108	383139
48	3438	79	64611	109	399258
49	3816	80	70802	110	415720
50	4243				

Annexure - 3

EPS - '95 Valuation - 31.3.2006

Assumptions of Rates of withdrawals (including scheme certific

Age-group	18-26	26-30	31-35	36-40	40-58
Rates (%)	3	4	3	2	0.1

Functions of Statistical Section

Annexure-4

Regional Offices

1. Collection of data covering required information for administration and actuarial valuation (as per format advised) in respect of every member entered / entering EPS'95 from all the offices under the jurisdiction of each RO of the EPFO.
2. Validation of data and ensuring completeness of information by interaction with the offices concerned.
3. Updation of information in respect of all members and pensioners including beneficiary pensioners) with regard to dynamic information such as change in marital status, salary changes, children status.
4. Updation of member status on continuing basis like death, withdrawal, retirement, disability and status with regard to exit of pensioners.
5. Compiling valid data for actuarial valuation annually and submit to controlling office (Statistical Section).
6. Preparing MIS Statements as per requirement for consolidation and review at controlling office.

Controlling Office (EPFO HQ)

1. Monitor the work of Statistical Section at R.Os and provide direction and guidance.
2. Consolidate MIS Statements of R.Os for review (this will include information on EPS'95 contribution from employers as also outgo for various benefits –pension as well as lump sum)
3. Consolidate valuation data from R.Os, carry out validation checks for consistency accuracy and completeness of data and obtain wherever required, revalidated data from R.Os. Take overall responsibility for submission of all required data for actuarial valuation.
4. Carry out statistical analysis annually related to the following:
 - Distribution of Members by age group \ Pensionable salary\ past pensionable service preferably broad industry group wise.
 - Experience as to death, withdrawal, and retirement of Members according to age at exit and deriving decrement rates at each age (and also duration for withdrawal) with guidance of an Actuary.
 - Analysis of salary increase separately for different employee categories \ industry groups.

Resources for effective functioning of Statistical Section

Statistical Section at R.Os and controlling office must be provided with required resources like computers and operators to capture and maintain data in electronic form and covered by network to enable effective functioning.

The staff selected for the section should be capable of utilizing computer applications data processing and programming.

EPS VALUATION 31 03 2007

Appendix - A

Age wise distribution of Number, Salary and Salary weighted by service
Sample Data Valued

Age	Number	Salary	salary x Service
18	8,551	8,714,446	6,098,748
19	16,411	20,911,853	16,341,570
20	24,545	33,046,742	35,175,190
21	32,834	49,184,699	65,083,220
22	40,598	68,285,137	102,019,400
23	46,379	90,925,168	153,221,400
24	49,994	110,221,056	214,787,800
25	54,177	124,765,824	274,528,100
26	57,113	141,949,570	411,021,100
27	64,434	162,713,302	541,817,000
28	60,501	165,065,566	608,506,200
29	63,736	177,272,204	734,762,500
30	63,373	182,377,223	839,629,400
31	67,109	198,368,785	974,726,600
32	67,987	202,684,837	1,081,084,000
33	63,677	196,092,238	1,132,532,000
34	61,409	192,095,407	1,183,395,000
35	63,288	197,618,585	1,295,727,000
36	60,543	190,717,667	1,325,256,000
37	65,305	200,428,481	1,455,556,000
38	57,682	191,237,588	1,444,986,000
39	57,197	192,398,577	1,523,258,000
40	53,671	182,552,684	1,491,188,000
41	50,808	177,271,295	1,503,819,000
42	52,388	182,602,152	1,591,086,000
43	47,280	177,608,789	1,586,944,000
44	42,782	167,482,947	1,517,040,000
45	41,122	166,540,325	1,548,603,000
46	38,040	155,810,667	1,471,196,000
47	40,290	162,781,144	1,556,274,000
48	34,061	153,277,794	1,502,439,000
49	30,951	144,152,017	1,432,260,000
50	27,346	135,164,247	1,352,336,000
51	27,540	140,799,081	1,437,916,000
52	25,790	136,371,675	1,405,750,000
53	22,574	122,056,076	1,264,723,000
54	20,336	116,477,575	1,223,097,000
55	19,525	116,718,253	1,235,415,000
56	15,474	75,594,320	707,382,100
57	7,909	41,431,918	405,898,800
58	3,423	16,156,085	159,884,200
TOTAL	1,748,153	5,667,924,000	39,812,763,320

EPS VALUATION 31 03 2007.

Appendix -8

Age wise distribution of Number, salary and salary weighted by Service
 Projected from sample data available for actual valuation

Age	Number	Salary	Salary x Service
18	174870	107809678	76170856
19	335,610	258,708,400	204,099,600
20	501,952	408,833,600	439,323,600
21	671,465	608,482,300	812,862,600
22	830,241	844,780,900	1,274,181,000
23	948,464	1,124,869,000	1,913,673,000
24	1,022,392	1,363,586,000	2,682,612,000
25	1,107,935	1,543,525,000	3,428,744,000
26	1,167,977	1,756,112,000	5,133,485,000
27	1,317,694	2,012,987,000	6,767,071,000
28	1,237,263	2,042,087,000	7,599,992,000
29	1,303,420	2,193,101,000	9,176,880,000
30	1,295,996	2,256,257,000	10,486,630,000
31	1,372,398	2,454,094,000	12,173,940,000
32	1,390,354	2,507,489,000	13,502,290,000
33	1,302,213	2,425,930,000	14,144,860,000
34	1,255,832	2,376,484,000	14,780,120,000
35	1,294,258	2,444,813,000	16,183,100,000
36	1,238,122	2,359,439,000	16,551,900,000
37	1,335,506	2,479,576,000	18,179,290,000
38	1,179,613	2,365,871,000	18,047,280,000
39	1,169,695	2,380,235,000	19,024,860,000
40	1,097,587	2,258,427,000	18,624,320,000
41	1,039,038	2,193,089,000	18,782,080,000
42	1,071,410	2,259,039,000	19,872,010,000
43	966,890	2,197,264,000	19,820,280,000
44	874,904	2,071,994,000	18,947,200,000
45	840,957	2,060,333,000	19,341,410,000
46	777,929	1,927,592,000	18,374,630,000
47	823,942	2,013,827,000	19,437,220,000
48	696,557	1,896,257,000	18,764,840,000
49	632,957	1,783,359,000	17,888,340,000
50	559,234	1,672,167,000	16,890,120,000
51	563,201	1,741,878,000	17,958,980,000
52	527,413	1,687,105,000	17,557,230,000
53	461,645	1,510,001,000	15,795,870,000
54	415,877	1,440,987,000	15,275,980,000
55	399,292	1,443,965,000	15,429,830,000
56	316,448	935,205,500	8,834,912,000
57	161,742	512,569,700	5,069,510,000
58	69,999	199,870,922	1,996,888,000
TOTAL	35,750,290	70,120,000,000	497,245,614,656

Primary pensioners

Distributions by age and pension amount (valued data)

age	Monthly Pension amount							Total
	<400	401-500	401-600	601-700	701-800	801-900	>901	
50	716	81	49	29	16	1020	2610	4521
51	1522	605	7	78	50	13216	24655	40133
52	1871	948	175	6169	5382	16458	20715	51718
53	2680	349	496	10472	12823	11361	18300	56481
54	2993	248	661	15457	9380	13183	16103	58025
55	3518	678	5574	14355	12274	14593	15318	66310
56	2924	1083	6380	13533	11309	11539	13454	60222
57	3482	2629	10101	15080	11944	10213	14310	67759
58	3177	3208	8829	12748	9930	8868	28161	74921
59	3721	4712	10100	12553	9552	17178	69617	127433
60	3738	4449	9905	21464	12931	11998	47405	111890
61	2996	4437	9563	19462	16822	6846	33972	94098
62	4847	2975	8852	21791	15452	7065	19740	80722
63	12028	3167	5404	15457	16446	7656	5474	65632
64	13983	4603	4830	19661	12170	501	205	55953
65	17838	2466	22050	8084	898	53	84	51473
66	14148	2379	19909	3147	38	27	61	39709
67	13636	6067	17829	2958	12	10	16	40528
68	9684	7015	8527	6744	4	2	7	31983
69	8195	5713	8944	3631	8	1	6	26502
70	6105	4532	8090	112	0	1	3	18843
71	4673	3327	5923	17	0	0	1	13941
72	3472	2386	3714	3	0	1	0	9576
73	1596	1133	1547	3	0	0	0	4279
74	876	660	704	2	0	0	0	2242
75+	7	3	10	3	1	0	0	24
Total	144426	69853	178173	223013	157442	151790	330217	1254914

Distribution of Members in salary and service bands (valued data only)

(A) EPS SERVICE

Service Years	Salary in muliles of Rs 100/-						TOTAL
	<10	11-20	21-30	31-40	41-50	>50	
0	1376	34313	64716	6500	0	0	106905
1- 5	2172	111966	421830	246724	5162	1418	789272
6 -10	0	43647	127016	161109	12178	650	344600
11	0	4889	70732	121073	150128	160554	507376
TOTAL	3548	194815	684294	535406	167468	162622	1748153