Towards estimating India's implicit pension debt on account of civil service employees

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Abstract

Promises by the State about payment of pension in the future are much like debt. For the purpose of fiscal planning, and analysis of pension reforms, it is important to compute the "implicit pension debt" (IPD) of the country. India's IPD comes about through workers and pensioners of centre, states and defence forces, and the funding gap of the Employees' Pension Scheme (EPS). This paper offers estimates of the IPD owing to three components: central (civil) employees, state government employees and the funding gap of the Employees' Pension Scheme, 1995. The IPD associated with these three, as of 2004, works out to Rs.2,003,405 crore or 64.51% of GDP. This is a substantial number when compared with the explicit internal public debt of the government of India at 84.86% of GDP (2004-05).

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1 Introduction

The traditional, defined benefit civil service pension (TCSP) scheme is unfunded – i.e. the central and state governments have an obligation to pay pensions to their employees but have not set aside any funds to meet these obligations. Government promises about pension payments to their employees at future dates are like the interest payments and repayments that have been promised on government bonds in the future. Hence, the stock of promises about pension payments in the future are akin to debt. This motivates the desire to compute the "implicit pension debt" (IPD), which shows the net present value of these future promises. The IPD is the debt of the government which is not explicitly recognised, in contrast with the stock of government bonds, which are directly visible.

IPD estimates are an important input to the current debate on India's pension reform. From the viewpoint of fiscal planning, there is no difference between explicit debt and implicit pension debt. Estimation of IPD is hence important for understanding India's fiscal situation.

The IPD of the Indian State may be seen as the sum of future pension liabilities for the following segments of the population:

1. *Central government*

   Workers, pensioners and family pensioners drawn from:

   - Defence,
   - Railways,
   - Post,
   - Telecom,
   - Civil ministries,
   - Autonomous bodies, educational and grant-in-aid institutions under civil ministries,[1]
   - Independent departments and apex bodies,[2]
   - Union Territories.

[1] Over 220 institutions under the Central Government fall in this category. As an example, Jawaharlal Nehru University (JNU) and the Kendriya Vidyalaya Sangathan are "autonomous bodies" under the Ministry of Human Resource Development. Employees of JNU and the 900 Kendriya Vidyalayas who were recruited prior to 01 January 2004 were entitled to the traditional civil service pension (TCSP). But these pension payments are reflected on the JNU and KVS budgets and not on the Ministry of HRD budget.

[2] These include the Central Bureau of Investigation, Planning Commission, UPSC, CAG, National Commission for Women, SEBI, etc.

2. *State governments*

   Workers, pensioners and family pensioners drawn from:

   - Civil ministries,
   - Autonomous bodies, educational and grant-in-aid institutions,[3]
   - Local bodies, e.g. the Panchayati Raj Institutions (PRI).

3. *The funding gap of the Employees' Pension Scheme (EPS)*

   Another component of the IPD of the Indian State is the extent of the funding gap of the Employees' Pension Scheme (EPS) of the EPFO.[4]

The total IPD of the government of India therefore reflects the NPV of future payments to existing workers, existing pensioners and family pensioners formed of all these components. At present, no IPD estimates exist, which encompass all these elements.[5]

In this paper, we offer estimates of the IPD on account of a narrow subset of all these sources of IPD. Specifically, we only address the workers associated with civil ministries, non-civil departments and their autonomous bodies, at the Centre and the States, as well as the Employees Pension Scheme, 1995. These estimates are, of course, only a part of the overall IPD of the Indian State. However, these calculations represent an important step forward in the task of obtaining IPD estimates for the Indian State.

2 Methodology

The IPD associated with a worker is the net present value of all future pension payments to the worker. Our estimation methodology consists of the following elements:

- *Demographic characteristics of government employees*

[3]These include state electricity boards, state transport corporations, statutory boards, etc.

[4]The IPD of GOI would also include the implicit liabilities on account of other legislated PF schemes (like the Coal Miners' Provident Fund and Seamens' Provident Fund) as well as the EPF contributions being managed by exempt provident funds under the EPFO.

[5]From official sources we know that there are roughly 1 million defence employees, nearly 2 million defence pensioners, and around 2 million pensioners of central (civil) ministries, post, telecom and railways put together. We also know that a majority of defence employees retire after only 20 years of service and become eligible to a full pension for life thereafter. No official estimates exist for the number of state government pensioners and family pensioners. As no data on their age and income distribution exists, the IPD associated with these segments cannot be estimated.

Computing the IPD requires information on the number of employees at each age with their income profiles. The central difficulty in estimating the IPD for GOI in the past has been the lack of such information for both central and state government employees.

This paper was made possible by the Indian Retirement Earnings and Savings (IRES) database, 2004. This database was created through a stratified random sample of 40,862 earners in November 2004. IRES captured primary information on central and state government employees and provided an estimate of the size of their population, as well as of their age and income distribution.

The observations of central and state government employees in IRES do not allow bins at every integer-valued age. Hence, observations were grouped in 5-year closed age intervals [21, 25], [26, 30], [31, 35], [36, 40], [41, 45], [46, 50], [51, 55], [56, 60]. Observations of employees of age less than 21 and over 60 years were removed. We assume that the year of retirement of an employee in an age interval will be 2004 plus 60 less the mid-point of the age-interval. For example, an employee in age-interval [56, 60] will retire in 2006.

- *All computations in 2004 Rupees*

  In the future, there will be systematic price rises, and corresponding changes in wages owing to wage indexation. This introduces non-comparability between payments at different dates. In this paper, in order to ensure comparability and to ease interpretation, *all calculations are made at 2004 Rupees.* Owing to this approach, we measure the wages of a government employee from his primary occupation as of 2004, and then assume there is no wage indexation in the future owing to inflation. Other elements of the methodology are adjusted so as to ensure that all measures are in 2004 Rupees.

- *Actuarial aspects are embedded in LIC's prices of annuities*

  One way of doing IPD estimates is to obtain estimates of future mortality of each worker or pensioner. In this paper, we sidestep this issue by using the price of an immediate survivor annuity product sold by LIC.[6] Actuarial calculations are embedded in LIC's annuity prices. We assume that GOI buys an annuity from LIC for a person at age 60, which pays a pension until death, and then pays half the pension to the spouse until his/her death.[7]

[6] As of December 2004, the LIC price of an immediate survivor annuity at age 60 is Rs.1000 for an annuity of Rs.69.90 per year.

[7] In practice, the family pension payable to government employees is 60% of the original pension. The annuity price for government pensions should be higher than the price of Rs.1000 for an annuity of Rs.69.90 per year considered in our calculations. Hence, the

Table 1 Income distribution of civil servants versus full earning population

	Total annual income (rupees)		
Group	25th percentile	Median	75th percentile
Employees of GOI	60,000	84,000	120,000
Employees of States	60,000	78,000	108,000
All government employees (GOI and state)	60,000	80,400	114,000
Full population of earners	19,000	35,000	64,000

Source: IRES database, authors' calculations.

Table 2 Educational characteristics: civil servants versus others

	GOI employees	Others
Illiterate	4.16	23.47
Graduate	22.80	6.60
Post-graduate	8.51	1.11

Source: IRES database, authors' calculations.

In practice, government employees derive an inflation-indexed pension with survivor benefits. However, the LIC prices for an immediate survivor annuity considered in this paper will only provide a *nominal* annuity. The cost of purchasing an inflation-indexed annuity is likely to be much higher and hence the IPD of the GOI is likely to be understated in this paper.

Also, mortality improvements may be expected over time, leading to a higher annuity price and therefore a higher payment by the GOI than is used in this paper. To the extent that mortality improvements do take place, our IPD estimates are biased downward.

While there are documented differences in the mortality of men and women,[8] this paper does not distinguish employees by gender. As women tend to outlive men and would draw a pension over a longer period, the IPD estimates in this paper would tend to be understated. Interestingly, LIC annuity prices are identical for both men and women at age 60, and hence our IPD estimates accurately portray the price of an annuity from LIC.

There is a subtle difficulty with IPD estimation for civil service employees, which derives from the difference between mortality as estimated using census data and the mortality of government employees. Employees of GOI are much richer than the population average (Table 1)

IPD estimates will be understated.

[8] *Source:* Women and Men in India, 2002, Central Statistical Organisation, Ministry of Statistics and Programme Implementation, Government of India

and much better educated (Table 2). Hence, they will live longer than the rest of the population. Thus, IPD calculations based on census-derived mortality rates have a downward bias. However, the customers of LIC – who shape LIC's annuity prices – are drawn from a similar socio-economic background as employees of GOI. Hence, LIC's annuity prices are likely to better reflect the future mortality experience of government employees as compared with actuarial calculations based on census data.

- *Future pension payments will be outsourced*

  Recent studies as well as the IRES (2004) data suggest that the number of persons currently drawing a pension from the government may be significantly higher than the actual number of government pensioners and family pensioners. This highlights the administrative difficulties faced by the GOI in effectively verifying death when making pension payments. This paper estimates the IPD on the assumption that the administrative responsibility of efficiently verifying death and delivering pension payments is outsourced to insurance firms for the current stock of employees. To the extent that the GOI continues to insource pension administration and delivery, our IPD estimates are underestimated.

- *All existing employees will continue in service till age 60.*

  There is a small chance that a government employee at (say) age 25 could die before age 60, and thus not enjoy a pension. In this paper, we make a simplifying assumption that there is zero mortality among government employees until age 60, so that every employee of GOI as of end-2004 will live till age 60. We also assume that all government employees will continue in service till age 60 and will draw a full pension from the government.

- *All new Central and State employees come under NPS from January 1, 2005*

  All employees of the central government (except armed forces) recruited after 01 January 2004 are covered by the New Pension System (NPS). Several States[9] have also adopted the same strategy for their own new employees. The dates on which the NPS is effective across these states is distributed over the last 18 months, and many States have yet to formally announce a shift to the NPS. In this paper, we have adopted a simplifying and optimistic assumption that all recruit-

[9]States which have issued Notifications on adoption of NPS for their new employees include Andhra Pradesh, Chattisgarh, Gujarat, Himachal Pradesh, Jharkhand, Madhya Pradesh, Manipur, Rajasthan, Tamil Nadu and Uttar Pradesh.

ment by GOI and all States after 01 January 2005 will be under the NPS.

This assumption blocks the flow of new workers into the traditional civil service pension and freezes the stock of government employees eligible for the TCSP. To the extent that this assumption is incorrect, and new recruits continue to flow into the TCSP, the IPD of GOI and states will be greater.

- *Future evolution of wages*

  A key element of IPD estimates is making projections for the future evolution of wages. This is done in two steps.

  Wage-experience profile of workers. Employees of GOI are in four grades, "A", "B", "C" and "D". The modal grade is C, as 64.42%[10] of employees are in grade "C". In grade C, the wage of a person at age 60 is 2.2 times larger than the wage at age 21. This implies an average wage growth of 2% per year on account of the wage-experience profile.

  Future pay commissions. Wages are revised in real terms, from time to time, through "pay commissions". In the post Independence era, there have been five Pay Commissions in India (1947, 1957-59, 1973, 1986 and 1996). Using this trend, of roughly one pay commission per decade, we assume a sixth pay commission in 2007, and three subsequent pay commissions in the years 2017, 2027 and 2037. To predict the impact of future pay commissions, we examined the wage levels observed under the fourth pay commission and the increase in wages due to the fifth pay commission. Wages of central government employees[11] registered a one-time real increase ranging from 18.09% to 70.77% due to the fifth pay commission.[12]

  The least increase was observed at the level of maximum salary paid to an Upper Division Clerk in the central government. This position registered a wage increase of 18.09%. In this paper, we assume that each future Pay Commission will cause a similar one-time real wage growth of 18.09% across all positions among central and state gov-

[10] *Source:* Brochure on Pay and Allowances of Central Government Civilian Employees (2002-03), Pay Research Unit, Department of Expenditure, Ministry of Finance, Government of India

[11] Source: Brochure on Pay and Allowances of Central Government Civilian Employees, 1996-97, Pay Research Unit, Department of Expenditure, Ministry Of finance, Government of India, New Delhi

[12] The revised pay and allowances as the fifth pay commission were implemented with retrospective effect from 01 July 1996 by most State Governments though the report was submitted towards the end of FY 1996-97. Three state governments including Andhra Pradesh, Karnataka and Nagaland implemented the wage revisions only in 1998 while Kerala implemented them in 1997.

Table 3 Combined impact of wage experience growth and future pay commissions

Age interval	Total effective wage growth (compounded annually)
21-25	3.85%
26-30	3.60%
31-35	3.90%
36-40	3.55%
41-45	4.01%
46-50	3.42%
51-55	4.45%
56-60	2.00%

ernment employees. This is a conservative estimate, given that all other posts registered a much higher wage increase (from 22.80% to 70.77%) due to the fifth pay commission. However, to the extent that this conservative assumption *understates* future wage growth in our calculations, it understates the size of the pension payable per worker, and hence the IPD.

Effective future wage growth. Using a 2% annually compounded growth rate on account of wage experience, and a one-time increase in the 'basic' wage of 18.09% on account of each future pay commission, we can calculate the effective real wage growth for the stock of existing government employees. In the present context, we compute the combined wage growth for each age interval. This is shown in Table 3.

- *Discounting future purchases of annuities*

  Through these steps, we will be in a position to measure the price payable – at LIC rates – for pensions for government employees at future dates. These future payments need to be discounted to 2004 in order to reduce them to IPD. This discounting is done at a 2% interest rate. This is roughly equivalent to a 6% interest rate on a 30-year GOI bond, with inflation at roughly 4%.

The key assumptions are summarised in Table 4.

3 Central government employees (civil)

3.1 Pension

We obtain estimates of the size of the population of central (civil) employees as well as information on their demographic and income distribution using

Table 4 Assumptions

Parameter	Value assumed
Date from which NPS comprehensively implemented at centre and states	1 January 2005
Age at retirement at all future dates	60 years
Impact of each future pay commission	A one-time real increase of 18.09%
Wage growth on account of wage-experience profile	2% per year
Interest rate on government bonds in real terms in coming decades	2%
LIC's price of immediate survivor annuity at age 60	Rs.1000 buys an annuity of Rs.69.90/year .

the Indian Retirement Earnings and Savings (IRES) database, 2004. Using the IRES, we project a population of 5,398,149 central (civil) employees.[13] Employees below age 21 and over age 60 have been excluded from our IPD estimations, and hence the relevant population of central (civil) employees for IPD calculations is 5,285,523. Official data on the number of GOI employees only reflects the employees of central (civil) ministries and non-civil departments.[14]

Table 5 shows the computation of IPD for central (civil) employees present as of 2004. This shows estimates of the payments that GOI would have to make to LIC, at various future dates, in order for LIC to takeover pension payment to GOI employees. These payments need to be discounted to the present in order to make the IPD. The NPV of the GOI IPD for central (civil) employees is estimated at Rs.388,629 crore.[15] If, instead of using the median wage, we use a trimmed mean wage of the income distribution at each age band, the IPD rises to Rs.428,408 crore.

[13]This includes employees of central (civil) ministries, non-civil departments (railways, post, telecom and civil defence), grant-in-aid institutions and autonomous bodies including educational institutions, statutory and apex bodies. This estimate does not include employees of the Indian Armed Forces. This also excludes the 63,513 employees (Annual Union Budget, 2005-06) of Union Territories as UTs were excluded from the sample for IRES.

[14]**Corroboration:** As per the Union Budget (2005-06), there were a total of 3,435,678 employees in central (civil) service and non-civil departments as of 2004-05. Of these, 1,410,979 employees belong to central (civil) ministries, 1,467,068 employees to Indian Railways, 555,056 employees to Department of Posts, and 2,574 employees belong to the Department of Telecommunications. No official estimate exists for the number of employees of autonomous bodies, educational and grant-in-aid institutions, statutory bodies, apex institutions, etc.

[15]If, instead of using the 2% discount rate for calculating the NPV, we apply a discount rate of 4% (implying nominal returns of 8% on GOI bonds), the IPD for central government (civil) employees is Rs.282,071 crore.

Table 5 IPD estimation for pension for central (civil) employees

This table shows details of IPD estimation for central (civil) employees as of 2004. As an example, using IRES, we estimate there will be 503,992 retirees in 2006, who had a median wage in 2004 of Rs.84,000. Using our projection methods, we estimate that in 2006, each of these employees will derive a mean annual pension of Rs.43,697 per year. The LIC price of this pension is Rs.625,133. Multiplying through, we estimate that in 2006, GOI would have to pay LIC Rs.31,506 crore in order to adopt the pension payments associated with this batch of retirees. This estimate – Rs.31,506 crore – is a future value, it is a payment to be made in 2006.

Year of retirement	Number retiring	2004 wage (Rs.)	Predicted pension (Rs.)	Annuity price (Rs.)	Total cost - FV (Rs. crore)
2006	503,992	84,000	43,697	625,133	31,506
2011	727,971	80,599	54,659	781,955	56,924
2016	1,108,022	84,000	62,879	899,552	99,672
2021	951,621	84,000	82,080	1,174,244	111,743
2026	850,937	72,000	77,554	1,109,500	94,411
2031	528,436	74,563	104,739	1,498,418	79,181
2036	465,110	65,000	100,785	1,441,844	67,061
2041	149,435	36,000	72,830	1,041,924	15,570

3.2 Gratuity

An employee covered by the TCSP rules, and who completes full service of at least 33 years with the central government, is eligible to a Gratuity payment of 1650% of the last wage drawn. As per the fifth pay commission, this Gratuity payment is capped at Rs.350,000 and is payable as a lump-sum on retirement. In this paper, we assume that employee of the central government works for at least 33 years and is hence eligible to full Gratuity. While the fifth pay commission increased the Gratuity ceiling from Rs.250,000 to Rs.350,000 (an increase of 40%), this paper assumes no further jump in this ceiling on account of future Pay Commissions. The lumpsum Gratuity payments to employees in each age interval, at 2004 prices, are shown in Table 6. This works out to Rs.74,704 crore.

4 State government employees

4.1 Pension

We obtain estimates of the demographic and income distribution of state government employees[16] using the Indian Retirement Earnings and Savings

[16]This includes the employees of ministries and departments, aided institutions including educational institutions, local bodies who draw salaries and pensions from the respective

Table 6 IPD estimate for Gratuity for central (civil) employees

This table shows details of IPD estimation for central (civil) employees on account of gratuity payments as of 2004. As an example, using IRES, we estimated 503,992 retirees in 2006, who had a median wage in 2004 of Rs.84,000. Using our projection methods, we estimate that in 2006, each of these employees will derive a lumpsum gratuity payment of Rs.120,166 on retirement. Multiplying through, we estimate that in 2006, GOI would have to pay Rs.6,056 crore towards Gratuity for this cohort. This is a future value of Gratuity – it is a payment to be made in 2006.

Year of retirement	Number retiring	2004 wage (Rs.)	Predicted Gratuity (Rs.)	Total cost - FV (Rs.crore)
2006	503,992	84,000	120,166	6,056
2011	727,971	80,599	150,311	10,942
2016	1,108,022	84,000	172,916	19,159
2021	951,621	84,000	225,350	21,445
2026	850,937	72,000	213,274	18,148
2031	528,436	74,563	288,035	15,220
2036	465,110	65,000	277,158	12,890
2041	149,435	36,000	200,284	2,993

(IRES) database, 2004. IRES projections estimate the population of all state government employees at 18,657,887. Employees below age 21 and over age 60 have been excluded from the IPD estimations, and hence the relevant population of state government employees for IPD calculations is 18,438,515.[17]

Table 7 shows the computation of IPD for state government employees present as of 2004. This shows estimates of the payments that the states would have to collectively make to LIC, at various future dates, in order for LIC to takeover pension payment. These payments need to be discounted to the present in order to make the IPD. The NPV of the IPD for all state

state government budgets.

[17]**Corroboration:** Using IRES, we estimate the total number of state government employees of all states (except Manipur) at 18,657,887. No official estimates of the total number of employees eligible for salary and pension in state governments exists. The 12th Finance Commission has estimated the total salary bill of all states at Rs.122,980 crore (2003-04) and estimated a CAGR of 12.08% from 1993-04 to 2003-04. Using this, the total salary bill in 2004-05 is projected at Rs.137,000 crore. The mean salary of state government employees as per the IRES is Rs.77,489.71. Multiplying this with the IRES estimate of the number of state government employees (18,657,887) gives us a total salary bill of Rs.144,584 crore (2004-05). This is 5.5% more than the total salary bill of states estimated from the 12th Finance Commission data. Importantly, the 12th Finance Commission's estimate of the total state government salary bill does not include salaries of local bodies and aided educational institutions of Gujarat, Nagaland and Goa. Also, the 12th Finance Commission does not provide any salary details for Jammu & Kashmir and Delhi as well as the bill for aided institutions of Mizoram.

Table 7 IPD estimation for pension for state government employees

This table shows details of IPD estimation for all state government employees as of 2004. As an example, using IRES, we estimate there will be 1,340,895 retirees in 2006, who had a median wage in 2004 of Rs.84,000. Using our projection methods, we estimate that in 2006, each of these employees will derive a mean annual pension of Rs.43,697 per year. The LIC price of this pension is Rs.625,133. Multiplying through, we estimate that in 2006, all state governments put together would have to pay LIC Rs.83,824 crore in order to adopt the pension payments associated with this batch of retirees. This estimate – Rs.83,824 crore – is a future value, it is a payment to be made in 2006.

Year of retirement	Number retiring	2004 wage (Rs.)	Predicted pension (Rs.)	Annuity price (Rs.)	Total cost - FV (Rs.crore)
2006	1,340,895	84,000	43,697	625,133	83,824
2011	2,643,722	84,000	56,965	814,950	215,450
2016	3,181,843	78,000	58,387	835,299	265,779
2021	3,265,364	72,907	71,123	1,017,503	332,252
2026	3,356,840	72,000	77,554	1,109,501	372,442
2031	2,372,499	62,000	87,093	1,245,961	295,604
2036	1,570,199	56,029	86,875	1,242,847	195,152
2041	706,949	41,244	83,439	1,193,693	84,388

governments is estimated at Rs.1,273,182 crore.[18] If, instead of using the median wage, we use the trimmed mean wage the income distribution at each age band, the IPD rises to Rs.1,347,301 crore.

4.2 Gratuity

Gratuity Rules for state government employees are similar to those applicable for Central government employees. Assuming that employees of state governments also work for at least 33 years and are hence eligible to full Gratuity. We assume no further jump in this ceiling on account of future Pay Commissions. The lumpsum Gratuity payments to state government employees in each age interval, at 2004 prices, are shown in Table 8. This works out to Rs.244,738 crore.

5 The funding gap in the EPS

The Employees's Pension Scheme (EPS) was introduced on 16 November 1995 and replaced the Family Pension Scheme, 1971. This defined benefit

[18] If, instead of using the 2% discount rate for calculating the NPV, we apply a discount rate of 4% (implying nominal returns of 8% on GOI bonds), the IPD for state government employees is Rs.912,874 crore.

Table 8 IPD estimate for Gratuity for state government employees

This table shows details of IPD estimation for state government employees on account of gratuity payments as of 2004. As an example, using IRES, we estimated 1,340,895 retirees in 2006, who had a median wage in 2004 of Rs.84,000. Using our projection methods, we estimate that in 2006, each of these employees will derive a lumpsum gratuity payment of Rs.120,166 on retirement. Multiplying through, we estimate that in 2006, the states would have to collectively pay Rs.16,113 crore towards Gratuity for this cohort. This is a future value of Gratuity – it is a payment to be made in 2006.

Year of retirement	Number retiring	2004 wage (Rs.)	Predicted Gratuity (Rs.)	Total cost - FV (Rs.crore)
2006	1,340,895	84,000	120,166	16,113
2011	2,643,723	84,000	156,654	41,415
2016	3,181,844	78,000	160,565	51,089
2021	3,265,365	72,906	195,589	63,867
2026	3,356,840	72,000	213,274	71,593
2031	2,372,499	62,000	239,505	56,822
2036	1,570,200	56,029	238,906	37,513
2041	706,950	41,244	229,458	16,221

(DB) scheme is administered by the Employees' Provident Fund Organisation (EPFO). A contribution of 9.49% of an employee's wages are credited to the EPS fund.[19]

Since 1996, the EPFO has commissioned an annual actuarial valuation for the EPS 95. As per the eighth actuarial valuation report (2003-04) of the EPS, the scheme had 28,090,458 members and 1,750,353 pensioners and family pensioners as on 31 March, 2004. However, this actuarial valuation has been based on only 12.76% of EPS member records. It is not necessary that the EPS member characteristics reflected by these available records are truly representative of the full population of EPS members. The age and income distribution of members and the age distribution of EPS '95 pensioners, as provided in the eighth valuation report, is provided in Table 9.

The EPS Balance Sheet (reproduced in Table 10) as per the eighth Actuarial Valuation (2003-04) of the scheme shows a deficit of Rs.22,021 crore (or 12.49% of the total liabilities of the scheme). The trend in the funding gap of the EPS is provided in Table 11.

Table 9 Profile of EPS members and pensioners

This table shows the age and income distribution of the current contributors and beneficiaries of the EPS 95 as provided in the 8th actuarial valuation report of this scheme.

Age distribution	Percentage of members (contributors)	Average annual salary of members (Rs.)	Percentage of pensioners
Less than 20	4.78	9,683.20	14.93
21-25	12.76	16,595.91	9.62
26-30	17.89	22,359.47	1.91
31-35	15.91	27,326.59	1.59
36-40	14.68	30,244.68	2.46
41-45	13.32	36,894.07	3.33
46-50	11.21	43,485.55	3.56
51-55	6.83	50,481.48	15.84
56-60	2.61	57,587.69	20.15
61-65	0	NA	21.25
66-70	0	NA	5.42

Table 10 EPS Balance Sheet as on 01 April, 2004

Liabilities (heads)	Liabilities in Rs.Crore	Assets (heads)	Assets in Rs.Crore	Deficit in Rs.Crore
Past service liability	26,832	Fund Balance	52,745	
Future service liability	72,430	Future contr. at 9.49%	101,522	
Withdrawal	48,754			
Death	15,010			
Expenses	993			
Member pensioners	8,590			
Widow pensioners	2,658			
Child pensioners	946			
Orphan pensioners	75			
Total	176,288		154,267	22,021

Table 11 Past trends in the assets and liabilities of EPS 95

Valuation Dates	Liability in Rs.Crore	Future contributions in Rs.Crore	Future balance in Rs.Crore	Surplus in Rs.Crore
16.11.1996	55,566	44,380	12,875	1,689
31.03.1998	79,472	63,464	17,247	1,239
31.03.1999	99,246	77,736	22,242	732
31.03.2000	126,614	98,920	27,764	70
31.03.2001	98,285	65,119	33,123	(-) 43
31.03.2002	139,691	83,513	39,042	(-) 17,136
31.03.2003	159,005	90,671	49,043	(-) 19,291
31.03.2004	176,288	52,745	101,522	(-) 22,021

Table 12 Summarising estimates

Component	Implicit Pension Debt	
	Rs.crore	As % of GDP
1. Central civil employees (pension & gratuity)	463,464	14.92
2. Central civil pensioners		
3. Central defence employees		
4. Central defence pensioners		
5. State civil employees (pension & gratuity)	1,517,920	48.88
6. State civil pensioners		
7. Funding gap in EPS 95 (on 31-03-2004)	22,021	0.71
Total		

6 Conclusion

Table 12 summarises the results of this paper. We have obtained estimates for three out of the seven components of the IPD of the Indian State. These three sum up to an IPD of Rs.2,003,405 crore or 64.51% of GDP.[20] This is a substantial value, when compared with the explicit internal public debt of GOI, which stands at 84.86%[21] of GDP (2004-05).[22]

Accurate and regular estimation of India's IPD, both at the national level and at the state level, is thus important for the purpose of fiscal planning and pension reforms. Further work is needed in building databases for deriving the IPD for individual states, and the remaining four components (defence workers, defence pensioners, central civil pensioners and state level pensioners). Further work is also needed to sharpen the estimates made in this paper.

[19]This includes 8.33% of the employer's contribution of 12% and a contribution by the Government of India at 1.16% of wages.

[20]For fiscal planning, it is important to distinguish between the "stock" and "flow" of pension liabilities. The stock of pension liabilities (or the Implicit Pension Debt) is the NPV of the sum of all future pension liabilites of the State. On the other hand, GDP is a flow variable. Expressing IPD as a percentage of GDP (where the former is about stock and the latter related to flows) is inconsistent. Hence for public policy implications, IPD as a percentage of GDP is only relevant if it is calculated at regular intervals of time as a percentage of GDP of that time period.

[21]Source: Centre for Monitoring Indian Economy.

[22]GDP at market prices is estimated at Rs.3,105,512 crore in 2004-05.