A STUDY OF TERMINAL BENEFITS OF THE CENTRAL GOVERNMENT EMPLOYEES

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Mr Chidambaram, Actuary, has contributed a great deal to the estimations and discussions.

A number of officers from the local central government offices, in particular from the office of the Accountant General, Bangalore, have contributed to the understanding of various pension related issues and provided with data relating to the subject. The discussions on the subject with Mr Radhakrishna, Accounts officer. Office of the Accountant General, Bangalorewere very informative, Mr Suresh, Office of the Accountant General, Bangalore provided required expenditure data from the Finance Accounts, Mr Balasubramanyam, Deputy Director, Railway Audit, South Western Railways, Hubli provided with data pertaining to the Railways.

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K.GAYITHRI
Project Director

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CHAPTER 1

INTRODUCTION

Background:

Rapid growth in the size of civil servant pension payments has become a subject of serious discussion all over the globe and there have been experiments to reform the pension practices in existence for long. India too has got into heated debates on the issues relating to the civil servant pension reforms. However, while designing any reform initiatives it is very imperative to have a correct assessment of fiscal costs arising on account of civil servant pension payment and the costs likely to arise in future in planning any remedial measures. Currently, although the current costs are known, the magnitude and the likely behavior of the future costs is not clearly known, as there is dearth of centralized information regarding the pensioner stock, annual addition and their age distribution, which is critical in arriving at meaningful projections. It is in this context that the present study has been commissioned by the Sixth Central Pay Commission.

Terms of Reference of the Study:

The terms of reference as proposed in the request letter are as follows

- To analyze the expenditure presently being incurred by Government, under the existing scheme of retirement benefits available to Central government employees under consideration, make projections thereon and suggest ways to meet this liability

- To see the age profile of existing government employees as had joined before 1-1-2004 and to assess the liability likely to arise towards their terminal benefits in the next three to four decades.

- To suggest various options by which the liability on this account can be contained in the future and devise suitable and self-sustaining models for financing the pension of Central Government employees with the final objectives that the funds so devised are able to meet substantially the entire pension liability of the government. The models developed may present alternate scenarios including those where no change in the existing scheme of terminal benefit is envisaged and those where options for changes in the scheme, such as one time lump sum payment, early exit, VRS among others are considered.

- To assess the financial liability that will need to be initially incurred by the government for implementation of such self-sustaining models.

Data Availability and Issues:

In addressing the proposed Terms of reference, there is a need for collecting and collating a large amount of data pertaining to the variables such as fiscal cost associated with the retirement benefits, number of government employees and retirees. In the search for the required data for the study a number of problems were encountered such as data not being available for majority of the items and even in the case of availability there was a considerable amount of variation from one source to another. However, the only dataset that is available with good amount of accuracy is the pension related annual expenditure data published by the Comptroller and Auditor General every year. A long series of this expenditure, i.e. from 1964-65 onwards, could also be built for all the sectors-Civil departments, Railways, Posts and Telecommunication and Defence. Break outs of the terminal benefits are available for the civil departments by each category- superannuation pension, commutation, gratuity, provident fund, which is very useful to track the extent of onetime and the long term outgo. However, these details are not available for the other departments.

While the fiscal costs available by each of the sectors help in understanding the current situation, its growth during the last three decades, these are not very useful in providing insights into the future costs associated with the pension payments. The problems arise on account of the fact that pension expenditure is directly dependent on the numbers retiring every year and their accumulated stock, which in turn is based on the numbers actually recruited by the government in the past. Projections based on the past pension expenditures would implicitly imply that there has been a steady state growth in the employment, which is not truly the case, thus could lead to very erroneous conclusions. In order to have meaningful projections it is very important that an accurate data base is available with reference to the variables such as the number of retirees every year and also the stock of pensioners by its categories such as survivor pensioners, family pensioners which in turn comprises of two categories, i.e. switch over pensioners and fresh family pensioners. These break outs are very essential in computing the pension liability in view of the fact that the pension outgo for each of these categories is guided by the existing pension formulae and the outgo varies from one category to another. Hence, it is very important that the future costs are based on estimations using the number of pensioners as the base. As mentioned earlier data availability in this regards is very unsatisfactory, and on account of this currently there are no long forecasts available from any source. The two committees[1] set up by Government of India, have provided projections up to 2009-10. These reports also amply highlight the existing serious data constraints. In fact the Working Group (2001) has recommended a format to be used in collecting the required information. The status with reference to the above recommendation is not known to.

Alternatively, there is a possibility of estimating the number of retirees and their stock from the number of central government employees provided fresh recruit details are available. Here too, in making any projections for the next three to four decades or to

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[1] Government of India, 2001, An assessment of Government of India's Pensionary Liability, Report of the Working Group, Ministry of Finance, New Delhi. and Government of India, 2002, Report of High Level Expert Group on New Pension System, Ministry of Finance, New Delhi

examine until what time period the pension outgo would prevail on account of the existing pensioners, there is an intrinsic requirement of long past data series, as the generally accepted assumption is that an employee would on an average serve for about thirty three years before attaining superannuation. This avenue too posed considerable problems as no single source of government employment matched with another and fresh recruitment data are not available. However, an attempt has been made to build a long series of central government employment data from the Department of Employment and training as published in various sources. From this data the fresh recruits' numbers have been generated based on widely accepted assumptions.[2] Hence the data that has been used in the study are approximations and can not be treated as completely accurate. Nevertheless, an important contribution of the study relates to the projection of future pattern of retirement and the related pension outgo in a fairly accurate manner by using the past employment and fresh recruitment trends. Interesting results have emerged from this analysis which are discussed in the subsequent chapters.

Structure of the Report:

The present report is structured in the following manner.

- Introduction
- Civil Servant Pension: The Genesis and Issues
- Pension Expenditure: Past Trends and Patterns
- Pension Expenditure Projections
- Meeting the Pension Expenditure: Some Alternatives
- Conclusions and recommendations

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[2] A detailed note on the assumptions and the estimation is presented in Chapter Four.

CHAPTER 2

CIVIL SERVANT PENSION: THE GENESIS AND ISSUES

Pension payments refer to the periodical payments made to the individuals beginning with retirement which continue until death. (Blake 2006) Pension provides lifetime income security for however long the retiree lives (Bodie, 1990) There are largely two forms of financing the same, first, the Pay as you go system (PAYG), an unfunded scheme, where in the current workers meet the bill of the retiree payments (by way of tax resources raised by the government) and secondly, the workers save from their current income to earn their future retirement income, a funded scheme. Thus the pension is a form of transfer of income from the working phase to the retirement phase. "Pension therefore serves two essential purposes. The first is consumption smoothing over an individual's lifecycle i.e. a person provides an income in retirement when some one is no longer working in exchange for contributions into a pension scheme when they are. The second is insurance, especially in respect of longevity risk-the uncertainty attached to an individual's life" (Blake, 2002, 1)

The sponsor incurs all of the risks of unanticipated changes in investment returns or from miscalculations about the amount of time workers will live after retirement under the defined-benefit arrangements, whereas in defined-contribution arrangements these risks fall primarily on the individual worker. This principle is central when considering any restructuring of pensions in the privatization process

Governmental involvement in the pension provisions can be of two forms, the first being civil servant pension, retirement payments made to its employees who were engaged in

the discharge of fiscal responsibilities undertaken by the government from time to time. The second is a kind of welfare measure provided to various sections of the society such as old, destitute, women etc., The criteria guiding the two kinds of pension payments vary from one another and any discussion pertaining to pension payments mixing up these two forms of pension payments could lead to very erroneous conclusions and policy decisions based on such conclusions could result in faulty policy design. More discussion on these issues in the Indian context is presented in a subsequent chapter.

Genesis of the Civil servant pension:

Civil servant pension practice has been in existence for long in many countries and it has been observed that formal pension benefits are available only to the civil servants in some countries.[3] (Robert Palacios and Edward Whitehouse, 2006) Provision of civil servant pension is guided by a different rationale and Palacios and Whitehouse state the following as the objectives for providing pension to government employees:

- Securing the independence of public servants
- Making a career in public service attractive
- Shifting the cost of remunerating public servants in to the future
- Retiring older civil servants in a politically and socially acceptable way.

A brief history of the origin of the pension schemes is reproduced below from Palacios

The military was typically the first to receive pension coverage, especially with regards to disability and survivor benefits. The English and Spanish governments were already providing pensions to their veterans in the seventeenth century and a naval pension was set up in the United States before it had even ratified its Constitution in 1787.

In his study of the origins of the British civil service pension scheme, Raphael (1964) finds that the first provisions were made on a discretionary and individual basis. These evolved into a more formal system with the first superannuation found for public sector workers introduced in 1712 for custom officials. In 1810, the foundation of British civil servants scheme was legislated by Parliament. While the parameters described in the original Act would be changed many times subsequently, the underlying model of a

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[3] Bangladesh, Bhutan, Botswana, Eritrea, Lebanaon and Maldives

generous and non-contributory pension scheme survived nearly two centuries and was inherited by dozens of former British colonies.

Indian pension system was largely inherited from the British legacy. Making government career attractive was largely the concern of the government in the early years of planning. Pension payment is one among the many strategies pursued by the government in attracting talented workers in to the public sector from the private sector.

Genesis of civil servant pension in India:[4]

The concept of old age security in India dates back to the 3rd century B.C.[5] According to Sukraniti, a king had to pay half of the wages for people who had completed forty years of service.

Further, practices of Civil servant pension were evident way back in 1881 when the retirement benefits were given by the Royal Commission on Civil establishments during the British colonial rule. However, these were in the nature of contributory pension with the employees contributing 4 percent of their salary. While these rules were applicable to all European members, they were applicable to some Indian members of the Civil Service. Civil servants were given a choice (Government of India Act 1919) for people employed before 1 January 1920 to retire on a pension proportionate to their service. Based on the recommendations of the Royal Commission, the practice of contributions by the beneficiaries was cancelled and at the same time an ICS provident fund for non Europeans was introduced. The Royal Commission recommended an increase in the rate of pension in the year 1924. Commutation of pension up to fifty percent of the pension was also statutorily granted. Further, the provisions of pension benefits were strengthened in the Government of India Act 1935. Thus, the civil servant pension system originated in India on the lines of the UK system. However, the Indian system differs from the UK

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[4] This section is largely from Tiwari,2004
[5] Tiwari, 2004

system in the sense that the UK system is governed by a statute where as the Indian system is governed by rules. (Swamy, 2003)

Terminal Benefits of the Civil Servant Employees in Modern India:

The retirement benefits to the government servant comprise of a monthly recurring payment termed 'pension' and a lump sum payment called 'retirement gratuity' A government servant is entitled to a monthly pension when retiring from government service on superannuation or invalidation after completing a qualifying continuous service of not less than ten years or more and those retiring voluntarily after rendering not less than twenty years of continuous service. Pension amount is fixed based on the number of years of qualifying service and average emoluments drawn during the last ten months of service before retirement. (Swamy, 2003) Terminal benefits provided to the central government employees covered under the old scheme included pension and non pension benefits, the former having a long term financial implications on the government as opposed to a one time financial outgo on the part of the government for the latter.

Pension Benefits:

Government servants on completion of 20 years of qualifying service are eligible for receipt of pension until they survive. The amount of pension is calculated based on the average basic pay drawn during the last ten months of the service**.** A government servant would be entitled for full pension up on completion of 33 years of qualifying service. Such pension would be reduced pro rata where the qualifying service is less than thirty three years. The minimum amount of pension is fixed at Rs 1275 per month (raised from Rs 375 pm after 1-1-1996) and is subject to maximum of Rs 15,000 (raised from Rs 4,500 after 1-1-1996) with a qualifying service of 33 years or more. This benefit in the form of family pension is extended to the spouse after the death of the government servant after one year of completion of government service or even before one year if the government servant was declared medically fit at the time of entry in to government service. Family pension scheme has been introduced with effect from 1-1-1964 and is

provided at a uniform rate of 30 percent of the basic pay subject to a minimum of Rs 1275 per month (raised from Rs 375 after 1-1-1996) to a maximum of Rs 9000 per month, (raised from Rs 1250 after 1-1-1996) Also, the family pension calculation from 1-1-1996 would be made at a uniform rate of 30 percent of basic pay instead of the slab system prevailing until then.

Commutation of pension

The government servants have a facility to commute a portion of their pension into a lump sum payment. While this proportion has undergone some changes in the past, with effect from the Fifth pay Commission, i.e 1-1-1996, this facility is extended at 40 percent of pension.[6] The maximum amount of pension admissible for commutation before 1-1-1996 was one third of the basic pension. The monthly pension drawn for fifteen years after the availment of commutation would be reduced by the portion commuted to be restored after 15 years. The restoration of commuted amount of pension introduced from 1st April 1986 was based on a judgment passed by the Supreme Court until which period commutation was never restored. Dearness Relief however, is provided for the entire pension amount**.** An important point to be noted here is that commutation is a one time lump sum payment and more discussion on this issue is taken up in a subsequent section.

Gratuity: Death-cum-retirement gratuity is admissible to a permanent government servant on his retirement or is paid to his family in the event of his death while in service. This has been treated under two separate titles from 1-1-1986, 'retirement gratuity' payable to the employee on his retirement and 'death gratuity' payable to the family on his death while in service. Retirement gratuity is admissible if the qualifying service is not less than 5 years. The amount is equal to one fourth of his emoluments for each completed six monthly period of qualifying service, subject to a maximum of Rs. 3.5 lakh, this is an enhanced amount from Rs 2.5 lakh. (For retirements on or after 1-1-1996) (Swamy, 2003)

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[6] The formula used (as given in Swain and Pranob Sen 2004) for calculating the lump sum payment is $C=(0.4)*(0.5)B*12*f$: wherein C refers to average value of commutation: B is the average monthly basic salary: f is the commuted value factor (determined by age at next birthday)

Terminal benefits also include leave encashment facility. Government servants can accumulate 300 days of leave in their credit to be encashed at the time of retirement. This has been enhanced from 240 days to 300 days by the Fifth Pay Commission.

Civil servant pension scheme in the global context:

The key design features of the civil servant pension scheme in the global context as discussed by Palacios and Edward Whitehouse are as follows:

- Separate retirement income arrangements are observed to be prevailing for the civil servants in more than half of the 158 countries for which information was available.
- Civil servants have a longer life expectancy than the rest of the population in some developing countries. Not many countries resorted to measures to increase the retirement age for long despite longer life expectancy; however, some countries have enhanced it in the recent past. **(Table 2.1)**

Table 2.1: Retirement age and service criteria for civil-service versus national pension schemes, 2004 High-income OECD countries						
Civil-service scheme				**National scheme**		
Countries	**Minimum**	**Normal**	**Years of service**	**Minimum**	**Normal**	**Years of service**
Australia		55-60		55	65	
Austria		60		56.5/61.5	60/65	
Belgium		60		60	65	
Canada	55	65	25	60	65	
Denmark	60	67			67	
Finland	60	63-65		56	65	
France		60		63	60	
Germany	62-63	65		57	65	
Greece		60			65	
Iceland	60	65		65	67	
Ireland				55	66	
Japan		65	25		65	
Luxembourg	57				65	
Netherlands	61	65		60	65	
Norway	62	67		62	67	
Portugal		60	36	55	65	
Spain		60	30	60	65	

Sweedan	60	65		61	65	
Switzerland	60	62		63	64/65	
United Kingdom	50	60			65	
United States				62	67	
Latin America/Caribbean						
Brazil		55/60				
Mexico		55	15	60	65	
Paraguay	50	60	30		60	25
Africa						
Burkino Faso	53	60			55	15
Burundi		55/60			55	15
Cameroon					60	15
Cape verde		60			60/65	3
Cote D'ivoire		55/60				
Ethiopia		55	10		no scheme	
kenya	50	55	10	50	55	
Malawi		55	20		no scheme	
Mauritius		60	15		60	
Nigeria	50	60	10			
Senegal		60			60	
Togo		55	15			
Zambia	50	55	10		55	
Middle East/North Africa						
Bahrain	none	60	15-25	45	55/60	15/20-10/15
Djibouri		55	25		55	25
Iran	none	60	20/30-0	none	60/55	20/30-10
Lebanon		60	25		no scheme	
Morocco	none	60	21/15-0		60	15
Tunisia	50	60	15	50	60	30-10
west Bank/Gaza	none	60	20-15		no scheme	
Yemen	none	55/60	30-15	none	55/60	30/25-15
South asia						
Bhutan		60			no scheme	
Nepal	50	58	20		no scheme	
India		60			58	
Maldives		none			no scheme	
Pakistan		60				
Sri Lanka		60			55	
East Asia/Pacific						
China	50/50	55/60	30		55/60	20
Indonesia	50	56	20			
Korea		60			65	
Malaysia	50	55	10			
Philippines	60	65	15			
Thailand		50	10		55	15

- Financing of civil servant pension payments in majority of the country cases is largely one of defined benefit, based on pay as you go system. It is observed that these practices are found exclusively in former British colonies in the Caribbean, sub Saharan Africa and South Asia.

- Pension replacement rate (pension as a proportion of relevant earning base) for a full career worker in civil service in the OECD countries averages slightly over 75 percent ranging between 50 to 100 percent. **(Table 2.2)**

Table 2.2: Accrual rates and maximum pension replacement rates for civil servants versus replacement rate for national-scheme, full-career worker.			
OECD countries			
Country	**Accrual rate**	**Maximum**	**national scheme**
	(civil service)	**replacement rate**	
Australia	1.65-3.4	66-88	52
Austria	2	80	80
Belgium	1.667	75	60
Canada	2	90	56
Finland	1.5	60	60
France	2	75	71
Germany	1.875	75	46
Greece	1.714	69	-
Iceland	1.9	76	73
Italy	-	80	66
Luxembourg	1.667	83	71
Norway	2.2	66	53
Portugal	2	80	-
Spain	-	95	88
Swedan	0.33/2.17	73	76
Switzerland	-	65	58
United Kingdom	1.25	67	37

- Indexation practices vary among the countries, while some base the pension revisions on prices, some others on wages and in yet others a combination of both.(**Table 2.3 and 2.4)**

Table 2.3: Indexation procedure for pension in payment, civil-service schemes			
Prices	**Civil service earnings**	**Economy wide earnings**	**Combination**
Australia	Austria	Norway	Belgium
Canada	France		Denmark
Iceland	Germany		Finland
Italy	Brazil		Greece
Spain	Mexico		Luxembourg
Swedan	Turkey		Netherlands
Switzerland			Portugal
United Kingdom			

Table 2.4: Accrual rates and indexation provisions for DB civil service pensions for full career workers in selected non-OECD countries.2004				
Latin America/Caribbean				
Country	**Civil service**		**National scheme**	
	Accrual rate(%)	**Indexation**	**Accrual rate(%)**	**Indexation**
Brazil	2.86	D		D
Honduras	2.25	D	1.875	D
Mexico	2.375	D	DC	P
Paraguay	3.1	D	2.5	D
Venezuela	2.5	W	1.375	D
Africa				
Benin	2.0	D	1.71	D
Burkino Faso	2.0	P	1.33	P
Burundi	1.67	D	2.0	D
Cape verde	2.9	W	2.0	D
Cote D'Ivoire	2.0	D	1.7	W
Gabon	2.0	D	1.57	D
Madagascar	2.0	D	2.0	D
Mali	2.0	D	1.67	P
Mauritius	2.0	W		D
Nigeria	2.0	D	1.875	D
Senegal	2.0	D	1.0	D

Togo	2.0	W	1.33	P
Middle East/North Africa				
Djibouti	2.25	D	2.0	D
Iran	3.3	D	3.3	D
Morocco	2.5	W	2.0	D
Tunishia	1.75	W	1.875	D
South Asia				
Bangladesh	3.2	D	None	n.a.
Bhutan	2.0	W	None	n.a.
India	1.52	P % D	1.52	D
Maldives	2.5	D	None	n.a.
Nepal	2.5	2/3 W	DC	n.a.
Pakistan	2.33	D	2.0	D
Sri lanka	3.0	D	DC	n.a.
East Asia				
Indonesia	2.5	D	D.C	n.a.
Korea	2.3		n.a.	n.a.
malaysia	2.0	D	D.C	n.a.
Philippines	2.18	D	2.0	D
Thailand				

Note: D = discretionary; P = prices, W = wages, DC = defined contribution;
n.a. = information not available.
* India refers to old civil service pension scheme.
Source: Same as Table 2.1

- An upward trend in the civil servant related pension payments observed to be a common trend among majority of the countries however marked by significant variations among them. On an average OECD countries spend about 2 percent of GDP on civil servant pension payments; however, it ranges between less than 1 percent of GDP to almost 4 percent. Similarly although the average spending in the low and middle income countries is 1.2 percent, the ratio ranges between less than 0.5 percent to slightly more than 2 percent. An important aspect to be noted in this context is that while the old age related pension payments are related to the demographic status of a society, the civil servant pension is directly dependent on the employment policy of the respective governments in the corresponding past period. Hence, assuming that a country that experiences a high share of pension payments would reveal the same behavior forever would prove wrong until and unless the governmental recruitment patterns remained the same. Any

comparisons across nations for any single point of time also tend to lead to misleading conclusions. (More details on the expenditure are presented in chapter three)

Current Issues on civil servant pension payments:

Civil servant Pension payments and its rapid growth in the recent past have attracted a large scale attention. While one school of thought urges the government to initiate immediate steps to introduce reforms to reduce the financial outgo and restore the fiscal balance, the other school of thought, largely comprising of the pension associations and government employee associations have been imploring the government to impart more liberal terminal benefits to the retirees. The Supreme Court of India judgments also strongly recommend pension payment practice.

Arguments in favor of pension reforms:

- **Fiscal pressure:** The rapid growth observed in the pension payments is likely to pose serious threat to fiscal sustainability. It is feared that the sharp growth in such expenditure could crowd out public investments in education, health and infrastructure. (Peter R Orszag and Joseph Stiglitz, 1999). This is especially the case with the low income countries with limited tax base (Palacios and Edward Whitehouse, 2006) It is also felt that the structure of pension programs serves to weaken the functioning of labor market and to distort resource allocation. PAYG system practiced over a period for the government servants has been resulting in an increased cost on account of pension payments. It has also been observed that civil servant pension benefits were generous compared to the ones covering the private sector. (Palacios and Whitehouse, 2006)

- **Wider coverage:** There is a large section of the society which is still outside the purview of social security provided in the country, over and above the 11 percent

of the labor force covered under security. (Shah, 2005) It is argued that providing subsidy based pension program to a few people cannot be sustained in the long run and there is a need to scale it up to many others in the uncovered sector to combat poverty among the elders. A number of countries provide social security to the old.

- **Family System:** The disappearance of the joint family system is considered as yet another cause for the destitution of the elderly and enhancement of their poverty.(Mukul Asher, 2006, Shah**,** 2005)

- **Demographic Transition and Pension Wealth**:

  Creation of pension system whereby the labor force could start investing in pension accounts early in their working life is expected to fetch good returns from such long term investments, thus boost their pension wealth and reduce their dependency. The demographic transition in India, where in India's working age population will constitute an increased share from the current level of 60% to 63.5% in 2040, provides a good opportunity to tap the demographic dividend that India is going to experience and to use this advantage to enhance the national saving rate (Mukul Asher, 2006).

  There is yet another dimension to the demographic transition in the nature of a sharp increase in the proportion of the population above 60 years of age expected to occur in early part of the next century. This bulging of population in the older age group is feared to cause a huge increase in the social security payments world over. In India this proportion of the population above sixty years of age, would increase from 8.62 percent in 2010 to 13.75 by 2030 and to 20.14 percent in 2050, however, is much lower in comparison to many other nations. In addition,

Arguments against pension reforms:

　　Deferred Wage: In the context of civil servant pension payments, it is argued that, the principle guiding the fixation of pay package is one of intentionally spreading out the compensation over a long period of time, where by the wages paid out

during the course of work tenure is kept low by design, and the pension payments made during the retirement phase compensate for the low working wages. The Supreme Court of India held that pension is neither a bounty nor a matter of grace depending upon the sweet will of the employer. It is not an ex gratia payment, but a payment for past services rendered. It is a social welfare measure, rendering socio-economic justice to those who in the heyday of their life ceaselessly toiled for the employer on an assurance that in their old age, they would not be left in the lurch.

Larry Wilmore observes "Actually, civil service pensions, because they are not based on contributions, are best described as deferred wages. Civil servants accept a lower current wage in exchange for the promise of a pension in their old age. If this pension were contributory, they would insist on a higher wage and government would have to either increase taxes or borrow (issue debt) to pay it. The real cost of civil servants is thus much higher than recorded under the current system of cash accounting. A good reform would be to move to a system of accrual accounting setting up at least a notional fund to pay these deferred wages" (Larry Wilmore, 2004)

- **Public and private sector pay differentials**: A comparison of the public and private sector wages reveals that while the public sector wages for the lower grades compares well with that of the private sector, the salaries of the employees belonging to the higher grades is highly unfavorable to the public sector employees. The post retirement benefits that the government employees are entitled to act as some incentive to retain them in the government sector.

Supreme Court on Pension payments:

Fifth pay commission provides a summary of the judgment given by The Supreme Court of India in the landmark judgment of D.S. Nakara and others vs. Union of India (AIR 1983, SC 130). While examining the goals that a pension scheme should seek to sub serve, the Apex court held that:

"A pension scheme consistent with available resources must provide that the pensioner would be able to live:

- Free from want, with decency, independence and self-respect; and
- At a standard equivalent at the pre-retirement level."

The Court felt that as determining the minimum amount required for living decently was difficult, selecting the percentage representing the proper ratio between earnings and the retirement income was harder. We owe it to the pensioners that they live, not merely exist.

It is argued by the Fifth pay commission that "It needs to be averred emphatically that pension is not in the nature of alms being doled out to beggars. The senior citizens need to be treated with dignity and courtesy benefited their age. Pension is their statutory, inalienable, legally enforceable right and the sweat of their brow has earned it. As such it should be fixed, revised, modified and changed in ways not entirely dissimilar to the salaries granted to serving employees." (Fifth pay commission)

Civil servant pension practice has been a very sensitive issue on which there are a number of views expressed in the country. It is observed that the amount due towards pension is property. It is stated "The right of a civil servant to receive pension is property with in the meaning of Article 31 (1) and Article 19 (1) (g) of the Constitution of India. Therefore any order which denies a civil servant the right to receive pension affects his fundamental right. A civil servant is entitled to file an action under Article 226 or even under Article 32 before the Supreme Court of India challenging the order on the ground that it denies him the pension to which he is entitled to under the rules." (Ramajois, 1987) Further the decision of the Constitution Bench in Deeki Nandan Prasad V, State of Bihar and other where in the Court rules that "Pension is a right and the payment of it does not depend up on the discretion of the Government but is governed by the rules and a government servant coming with in whose rules is entitled to claim pension. It was further held that the grant of pension does not depend up on any one's discretion. It is only for the purpose of quantifying the amount having regard

to service and other allied matters that it may be necessary for the authority to pass an order to that effect but the right to receive pension flows to the officer not because of any such order but by virtue of rules."

CHAPTER 3
PENSION EXPENDITURE: PAST TRENDS AND PATTERNS

"There are separate pension schemes for civil servants, and often for other public sector workers, in about half of the world's countries, including some of the largest developing countries, such as Brazil, China and India. Yet, compared with the voluminous literature on national pension programs, very little analysis has been produced on this aspect of pension policy". (Robert Palacios and Edward Whitehouse, 2006)

In the context of the civil servant pension payments current pension expenditure would be directly an outcome of the size and pattern of the corresponding past employment, which again is broadly guided by the kind of role assumed by the government in the promotion of social and economic development. On the contrary, the old age security related pension payments are directly related to the population that become old, thus while the civil servant pension payments are directly dependent on the number of recruits, that of old age pensions are related to the numbers turning gray from time to time. Hence, any temporal analysis pertaining to the civil servant pension payments has to take into consideration the public sector employment and the changes that have taken place in it over a period of time. Huge pension outgo at any particular point of time is not tantamount to a secular indefinite increase in pension payments unless and until it is associated with the same kind of civil servant intake all along. The demographic characteristics of a nation largely impact on the old age related pension payments.

Indian government assumed a very expansive role in the aftermath of the independence and a couple of initial plan periods. In the process of providing for various goods and services that the government took on it self, there was a sharp increase in the employment base created for almost three decades after the independence under various five year plans. Employee intake as under the various five year plan period (from the Third plan onwards, the period for which annual employment data were available) reveals that there has been a considerable decline in the numbers recruited[7]from one plan period to another. (Chart 3.1) The decadal growth reveals that the employment increased by 33 percent in sixties, 15 percent in seventies, 7 percent in eighties and a negative growth of 4 percent in nineties.

Graph 3.1:Central Government employee intake under Five Year Plans
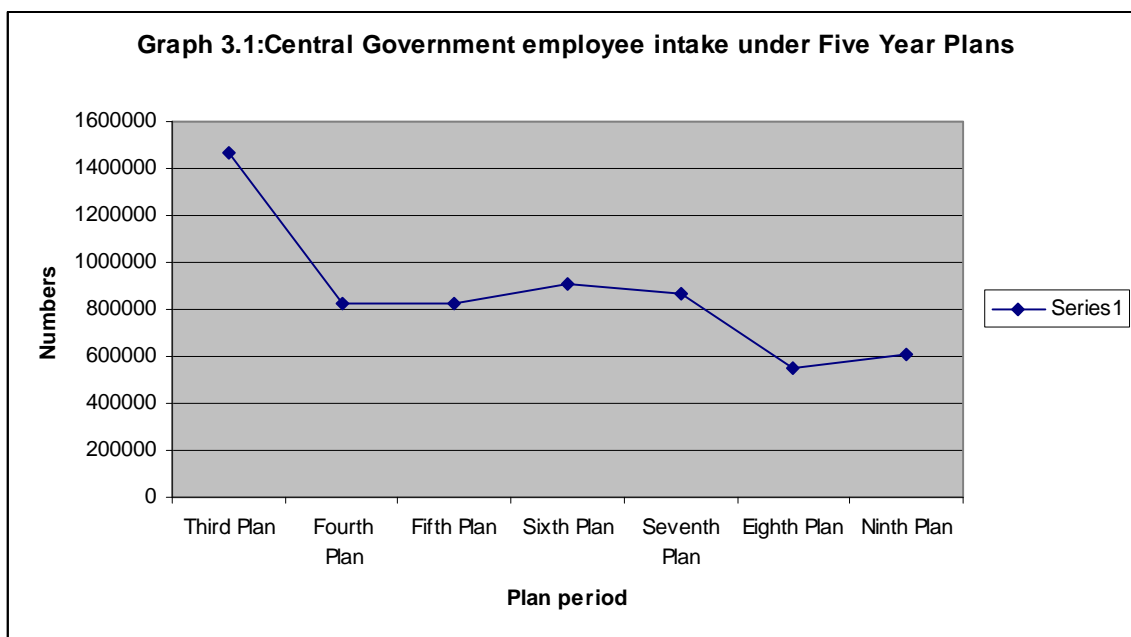
The number of central government employees as a percent of the organized sector employment in the country has declined from 17.3 percent in 1960-61 to 11.45 percent in 2003-04.

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[7] Number of employees recruited from 1960-61 have been computed from the annual central government employee data base provided by the Department of Employment and Training as published in various issues of Economic Survey

Table 3.1 Central Government Employment

Year	Civil Dept.	Railways	Grand Total
1960-61	927214	1,162,786	2,090,000
1970-71	1392452	1,378,848	2,771,300
1980-81	1620729	1,574,371	3,195,100
1990-91	1754815	1,654,985	3,409,800
2000-01	1711415	1,549,385	3,260,800
2003-04	1581572	1,445,428	3,027,000

Source: Government of India, Economic Survey, Various Issues

Table 3.2 Decadal Annual Average Growth Rate

Year	Civil Dept	Railways	Grand Total
1970-71	3.94	1.68	2.76
1980-81	1.49	1.32	1.41
1990-91	0.79	0.50	0.65
2000-01	-0.28	-0.66	-0.45
2003-04	-2.68	-2.34	-2.51

Data pertaining to the pay and allowances of the Central government, presented in table 3.3 reveals that expenditure on pay and allowances increased from Rs 417 crore in 1960-61 to Rs 36704 crore in 2004-05, revealing a compound rate of growth of 19.61 percent per annum. However, the pay and allowance expenditure as proportion to the GDP has experienced a significant decline during the period under reference from 2.7 percent in 1960-61 to1.18 percent in 2004-05 after reaching its peak in

1965-66. These declining trends can be observed as proportion to revenue receipts and revenue expenditure after reaching its peak in 1970-71, too account for the fact that the government staff size has shrunk during the period under reference.(Table 3.2)

Table 3.3 Central Government Expenditure on Account of Pay and Allowance

Year	Expenditure on pay and allowances (Rs in Crores)	As a percentage to		
		Revenue Receipts	Revenue Expenditure	GDP at market price
1960-61	417	32.20	33.50	2.70
1965-66	754	25.00	27.90	3.10
1970-71	1186	36.02	37.89	2.60
1975-76	1886	23.98	27.03	2.26
1980-81	2751	22.23	19.09	1.91
1985-86	5422	19.34	15.98	1.95
1990-91	10027	18.25	13.64	1.76
1995-96	18785	17.06	13.43	1.58
2000-01	28688	14.89	10.33	1.37
2004-05	36704	11.99	9.55	1.18

Source : Indian Public Finance Statistics and Fifth central Pay Commission reports

Pension Expenditure: Past Trends

Just as the wage payments, pension payments too are largely guided by the numbers and the increases that are effected to the pension fixation from time to time. Number of pensioners in turn is largely guided by the number of employees recruited in the corresponding past period. Fifth pay commission had pointed toward "a higher rate of retirement in the next ten years, because of 57 percent increase in employment over the period 1957-71" (Government of India, 1997, p.1788)

However, the subsequent trends in the fresh recruitments to government employment up to 2003-04, as stated earlier, have revealed a sharp decline and a logical

conclusion to which would be that, both the number and the stock of retirees would follow a similar declining path after some years. However, this may not be the case with the absolute size of the pension related expenditure as it is guided by not only the number of pensioners but also by the price and wage indexation practices pursued in the past and to be pursued in future.

In order to understand the past trends and pattern of the pension related expenditure related data were collected from 1964-65 until 2003-04, i.e the period covered by the old Pension Scheme[8]. The total pension expenditure in terms of its absolute size has had a considerable increase during the period of reference, from Rs 31.24 crore in 1964-65 to Rs 26205.06 crore in 2004-05 (Table 3.4) revealing an exponential growth of 18.45 percent.

Table 3.4: Department wise Pension Expenditure

(Rupees In crores)

Year	P & T	Railways	Defence	Civil	Total
1964-65	3.36	2.2	20.56	5.12	31.24
1969-70	4.47	7.63	34.36	8.11	54.56
1974-75	9.12	18.99	87.61	19.53	135.25
1979-80	26.57	75.35	192	54.89	348.81
1984-85	73.27	278.15	479.88	148.72	980.01
1989-90	216.02	782.01	1878.6	448.02	3324.65
1994-95	409.68	1706.21	2730.84	922.9	5769.63
1999-00	1118.58	4021.61	11024.03	3261.89	19426.12
2004-05	1208.04	6696.89	11920.95	6379.19	26205.07
Growth rate	**17.39**	**21.2**	**19.06**	**19.7**	**18.45**

Source: Government of India, Various Issues of Combined Finance and Revenue Accounts and Finance Accounts

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[8] New Pension Scheme (NPS) has been introduced for the employees recruited from January 2004)

Table 3.5: Department wise pension Expenditure
(Decadal Annual Average Growth Rate)

Year	P & T	Railways	Defence	Civil	Total
1974-75	8.35	18.73	13.24	12.28	13.37
1984-85	18.38	23.31	15.29	18.18	17.81
1994-95	15.32	16.42	14.79	16.15	15.75
2004-05	9.11	12.31	12.61	17.19	13.59

Out of the four sectoral break outs that were available- Civil, Railways, Posts and Telecommunications and defence, the increase has been very sharp for the railways (21.2 percent) followed by the civil departments (19.17 percent) and defence (19.06 percent) and that of posts and telecom being the smallest increase (17.39 percent) However, an important aspect to be noted here is that both railways and the civil departments had started with a much smaller base than that of the defence, hence while the rate of growth of railways and the civil departments is higher than that of the defence sector, the volume of pension payments for the defence sector is much higher than that of the other departments.

Employee cost to the government:

The total cost to the government on account of pay and allowances and pension payments during the last thirty years has had a considerable decline as a percent to GDP, revenue receipts and revenue expenditure. (Charts 3.2, 3.3 and 3.4) However, the increase that set in during the nineties has caused a lot of uproar regarding the growing employee costs to the government leading to a lot of urge to reduce these costs. While there is strength in the argument that the salary and pension costs should not come in the way of developmental programs of the government, it has to be

noticed that the issue is not all that alarming as made out to be. These concerns have emerged on account of the trend analysis pertaining to a very short period, i.e the decade of nineties, where in, the pension costs were on the hike due to the large employment base created after the independence, coupled with the pay revisions. These variables also revealed an increasing share in the revenue receipts as the resource position of the government was not buoyant. The future behavior of the pension costs may not be a serious cause for worry as it will be a replica of the past employee costs and there has been considerable decline in the share of pay and allowance costs, as revealed the trend line pertaining to the pay and allowance costs during the last thirty years.

Chart 3.2: Pay & Allowances and Total pension Liability as a percentage of GDP

Chart 3.3: Pay & Allowances and Total Pension Liability as a percentage to Revenue Expenditure

Chart 3.4: Pay & Allowances and Total Pension Liability as a percentage to Revenue Receipts
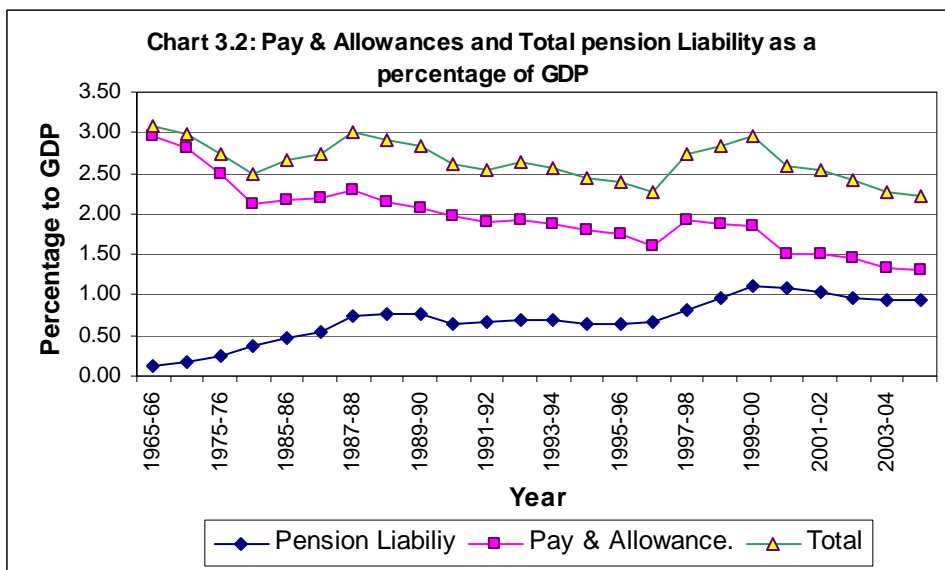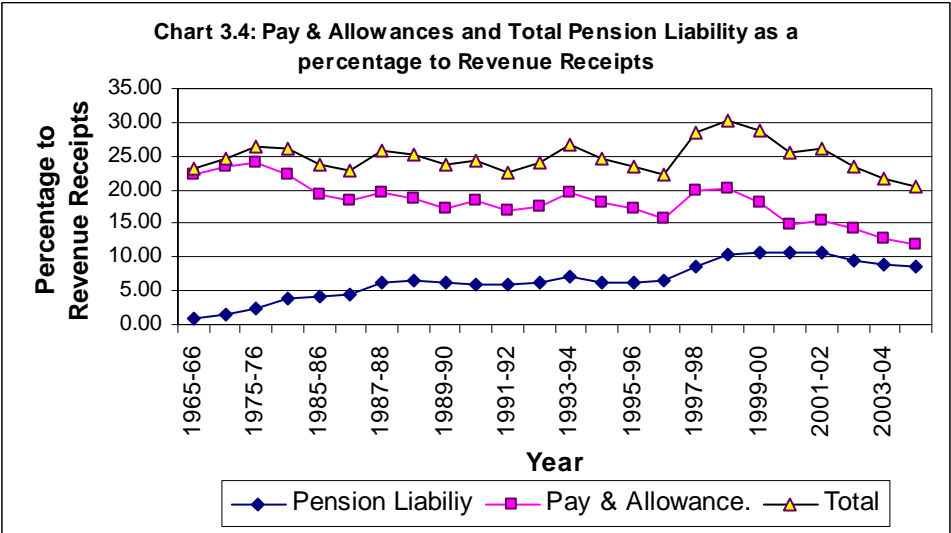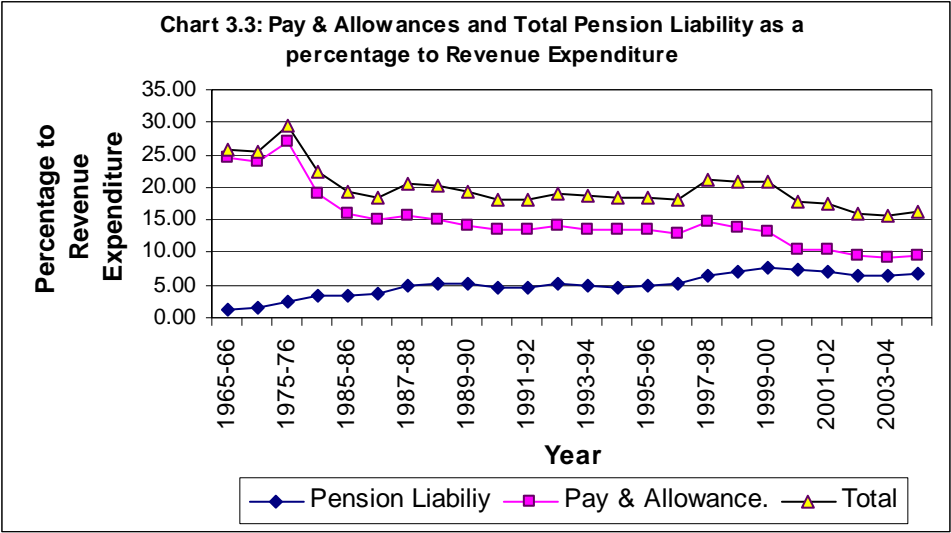
Sector wise distribution of pension expenditure:

The defence sector accounts for the largest share all along; however, has been on the decline-reduced from 66 percent to 45 percent during the reference period. (Table 3.6)

Table 3.6: Department wise Pension Expenditure
(percentage to total)

Year	P & T	Railways	Defence	Civil
1964-65	10.77	7.03	65.8	16.4
1969-70	8.19	13.98	62.97	14.86
1974-75	6.74	14.04	64.78	14.44
1979-80	7.62	21.6	55.05	15.74
1984-85	7.48	28.38	48.97	15.18
1989-90	6.5	23.52	56.51	13.48
1994-95	7.1	29.57	47.33	16
1999-00	5.76	20.7	56.75	16.79
2004-05	4.61	25.56	45.49	24.34
Average	**7.15**	**21.94**	**54.73**	**16.18**

On an average, defence accounts for about 54.73 percent followed by railways with 21.94 percent, thus the two sectors together account for more than 75 percent of the total pension outgo. Posts and Telecom on the contrary had a small share which was also on the decline. Railways started with the smallest share but ended to be in the second position. (Chart 3.5)

Chart 3.5 Present Distribution of Pension outgo by sectors
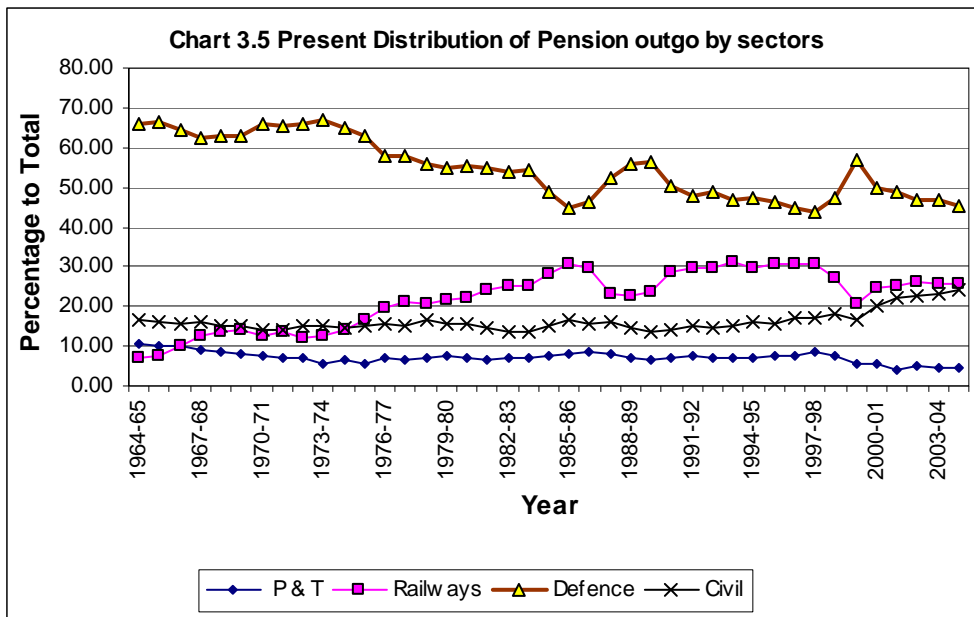
An important aspect to be noted here is that defence sector is currently not included in the New Pension Scheme and railways should supposedly be meeting the pension payment from the pension fund created for the purpose.

Pension payments and GDP

Pension expenditure as a percent of Gross Domestic Product was 0.13 percent in 1964-65 which has increased to 0.93 percent in 2004-05. It reached its peak in 1999-2000, of 1.1 percent of GDP after which there has been a decline. (Table 3.7) On an average pension payments have constituted 0.51 percent share of GDP.

Table 3.7: Department-wise Pension Expenditure as a percent of GDP

Year	P & T	Railways	Defence	Civil	Total
1964-65	0.01	0.01	0.08	0.02	0.13
1969-70	0.01	0.02	0.09	0.02	0.14
1974-75	0.01	0.03	0.12	0.03	0.19
1979-80	0.02	0.07	0.18	0.05	0.32
1984-85	0.03	0.12	0.22	0.07	0.44
1989-90	0.05	0.18	0.43	0.1	0.76
1994-95	0.04	0.19	0.3	0.1	0.63
1999-00	0.06	0.23	0.63	0.19	1.1
2004-05	0.04	0.24	0.42	0.23	0.93
Average	**0.03**	**0.13**	**0.26**	**0.09**	**0.51**

A close look at the chart 3.6 highlights two interesting aspects, first, the overall trend and its increase are largely guided by the pension payments of the Defence sector. Secondly, the increase has not been very significant until the mid eighties, followed by marginal increase until the mid nineties and a sharp increase thereafter. These trends synchronize well with the recommendations of pay commission, especially the

fourth and the fifth pay commissions and their full implementation. Implementation of the fifth pay commission's recommendations in the case of the defence sector took a longer time than the other sectors, thus its complete effect was realized in the year 2000-01.

Chart 3.6: Pensionary Expenditure as a Percentage of GDP
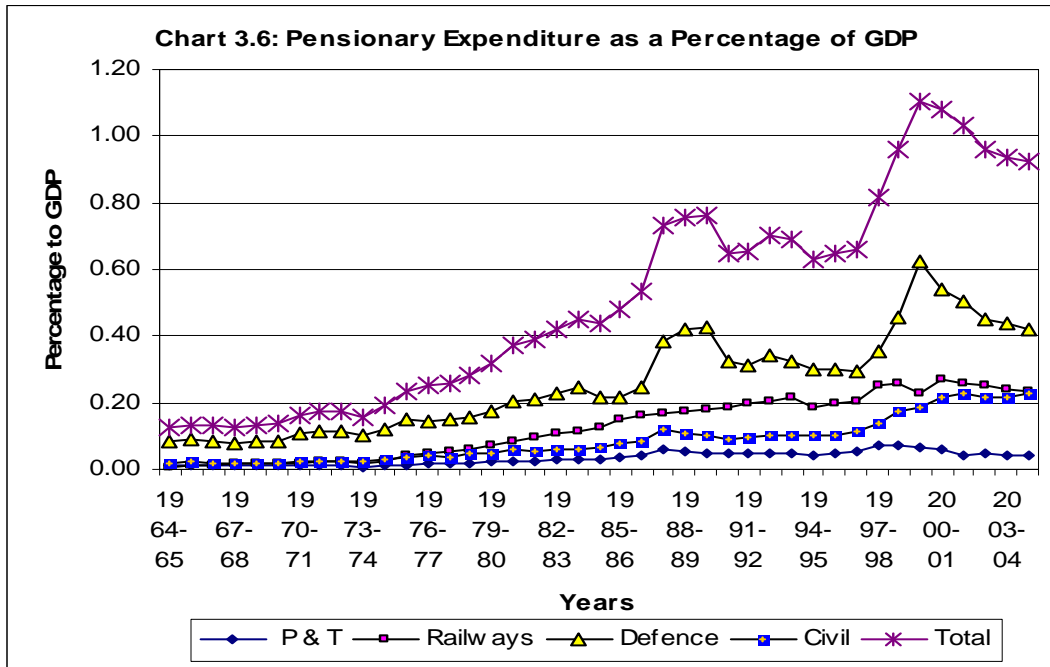
Civil Servant Pension payments in other nations:

Charts presented below reveal that Civil servant pension payments in the OECD countries on an average constitute 1.8 percent of GDP; however, Austria, Belgium, France, and United Kingdom have revealed a much larger share and the United States of America is just above average. Among the low and middle income countries while the average is 1.2 percent of GDP, majority of them, including India[9] have levels higher than the average. Interestingly, the share of civil servant pension payments in the tax revenues in the case of India is below the average level for the low and middle income countries.

While it is useful to compare the country's situation with other nations implementing similar schemes, these kinds of comparisons across the nations for only one or two

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[9] The share indicated in the chart pertains to that of the central as well as state governments. The share of Central government in 1999 was of the order of 1.1 percent of GDP.

time points are not very meaningful, as unlike the national old age schemes which depend on the general population and their age structure at any given point of time, that of civil servant pensions entirely depend on the number of employee intake from time to time, which may not be exhibiting uniform pattern over time. The payments depend directly on the numbers retiring from time to time which in turn is dependent on the numbers employed from time to time. Hence, while it may serve well to have comparison with other nations to understand the magnitude of problem, it does not serve well to replicate the reform initiatives with out understanding the country specific needs.

Fiscal Burden in OECD

	Value
Austria (00)	3.5
Belgium (98)	3.5
France (00)	3.35
United Kingdom (00)	2.85
Finland (00)	2.65
United States (01)	2.0
Germany (00)	1.85
Australia (01)	1.3
Canada (01)	1.1
Denmark (00)	1.1
Netherlands (00)	1.05
Japan (00)	0.95
Spain (00)	0.9
Ireland (00)	0.85

Pension spending as share of GDP

Average 1.8% of GDP

(x-axis: 0, 0.5, 1, 1.5, 2, 2.5, 3, 3.5, 4)

Fiscal Burden in OECD

Austria (00)	
Belgium (98)	
United Kingdom (00)	
France (00)	
United States (01)	
Finland (00)	
Germany (00)	
Australia (01)	
Japan (00)	
Canada (01)	
Ireland (00)	
Netherlands (00)	
Spain (00)	

Pension spending as share of tax revenues

Average 4.9%

Fiscal Burden in low and middle income countries

Country	
Tunisia (02)	
Zimbabwe (01)	
Sri Lanka (02)	
Mauritius (00)	
India (99)	
Malawi (99)	
Turkey (97)	
Brazil (98)	
Nigeria (02)	
China (02)	
Jordan (02)	
Kenya (02)	
Morocco (02)	
Benin (98)	
Cape Verde (97)	
Senegal (97)	
Cameroon (01)	
Philippines (97)	
Korea (97)	
Indonesia (02)	
Maldives (02)	
Iran (01)	
Bangladesh (02)	
Nepal (02)	
Ethiopia (93)	

0.0% 0.5% 1.0% 1.5% 2.0% 2.5%

Pension spending as share of GDP

Average 1.2% of GDP

Fiscal Burden in low and middle income countries

Country	
Brazil (98)	
Sri Lanka (02)	
Malawi (99)	
Benin (98)	
Mauritius (00)	
Turkey (97)	
Cape Verde (97)	
China (02)	
Senegal (97)	
Kenya (02)	
Bangladesh (02)	
India (99)	
Korea (97)	
Nigeria (02)	
Philippines (97)	
Cameroon (01)	
Iran (01)	
Indonesia (02)	
Ethiopia (93)	
Nepal (02)	
Maldives (02)	

0.0% 2.0% 4.0% 6.0% 8.0% 10.0% 12.0%

Pension spending as share of revenues

average = 5.9% of revenues

While, there has been a significant increase over the years, the Indian situation is not very much off the mark as compared to OECD and non OECD average Pension payments and the Revenue Receipts:

Pension expenditure in relation to Revenue Receipts:

While it is meaningful to study the trends in the share of pension payments to the GDP, it is more important to analyze what portion of the governmental receipts are used up in the pension payments as these are committed payments and the resource availability for other developmental activities directly depends on the size of such committed payments.[10]

Table 3.8: Department- wise Pension Expenditure as a percentage of Revenue Receipts

Year	P & T	Railways	Defence	Civil	Total
1964-65	0.11	0.07	0.68	0.17	1.03
1969-70	0.10	0.16	0.74	0.17	1.18
1974-75	0.14	0.29	1.36	0.30	2.10
1979-80	0.24	0.68	1.73	0.49	3.14
1984-85	0.31	1.19	2.04	0.63	4.18
1989-90	0.41	1.50	3.59	0.86	6.36
1994-95	0.45	1.87	3.00	1.01	6.33
1999-00	0.62	2.22	6.07	1.80	10.70
2004-05	0.39	2.19	3.90	2.08	8.56
Average	**0.33**	**1.22**	**2.50**	**0.84**	**4.88**

Fiscal stress that is caused by any specific expenditure item is more perceivable, when its share is analyzed in the background of revenue receipts of the government as

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[10] There are also other forms of committed expenditure incurred by the government which become compulsory payments until and unless the commitment itself is reduced.

it indicates the extent of resource consumption and conversely the availability of resources for other governmental programs.

The share of pension expenditure in the revenue receipts of the central government are presented on chart 3.7. The decade of nineties has experienced a considerable increase in the share of pension expenditure to the revenue receipts, which however, has revealed a declining trend after 1999-2000.

Chart 3.7: Pensionary Expenditure as a Percentage of Revenue Receipts
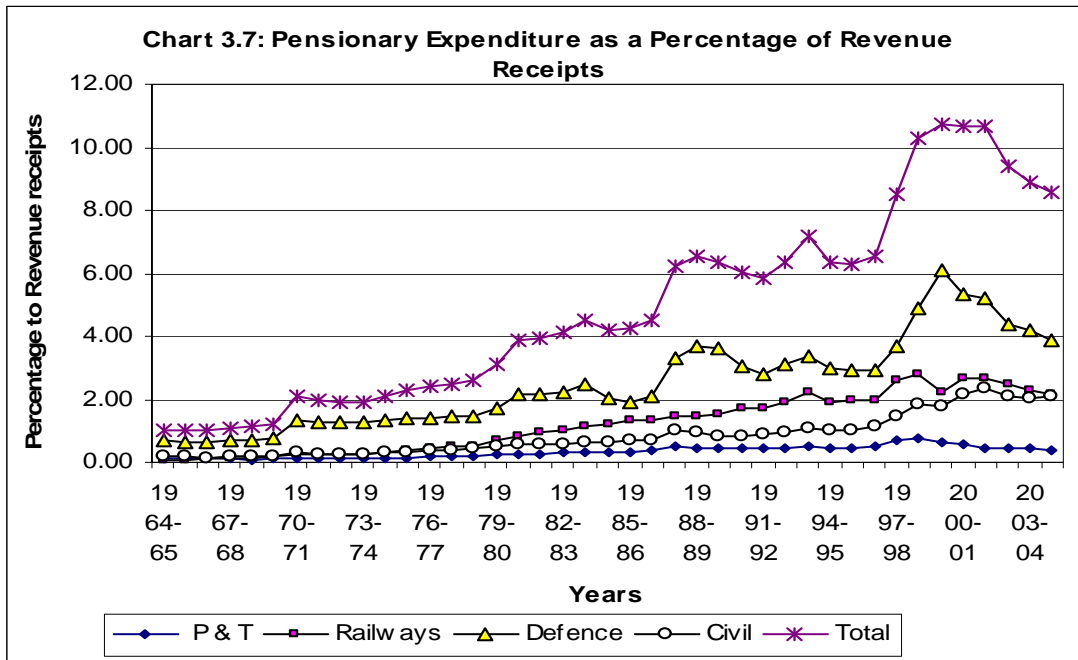
Pension Expenditure in relation to Central government Revenue Expenditure:

Pension expenditure as a percent of the central government revenue expenditure (Chart 3.8) has increased from 1.13 percent in 1964-65 to 1.98 percent in 1973-74 (Third pay commission recommendations were implemented from 1-1-1973) with a sharp increase in 1970-71 to 2.17 percent, which was mainly on account of the defence sector

*Table 3.9: Department-wise Pension Expenditure as a
percentage of Revenue Expenditure*

Year	P & T	Railways	Defence	Civil	Total
1964-65	0.12	0.08	0.74	0.19	1.13
1969-70	0.10	0.17	0.76	0.18	1.21
1974-75	0.16	0.33	1.54	0.34	2.38
1979-80	0.23	0.64	1.63	0.47	2.96
1984-85	0.26	1.00	1.73	0.54	3.54
1989-90	0.34	1.22	2.93	0.70	5.18
1994-95	0.34	1.40	2.24	0.76	4.72
1999-00	0.45	1.61	4.43	1.31	7.80
2004-05	0.31	1.74	3.10	1.66	6.82
Average	**0.26**	**0.97**	**2.04**	**0.67**	**3.93**

With the full impact of third pay commission starting from 1974-75 the share
increased to 2.38 percent with a constant increase from there on to 3.51 percent in
1985-86 ((Fourth pay commission recommendations were implemented from 1-1-
1986). The share was at its peak in 1999-2000 at 7.8 percent, after the fifth pay
commission recommendations were implemented from January 1996. (Chart 3.8)

Chart 3.8: Pensionary Ependiture as a Percentage of Revenue Expenditure
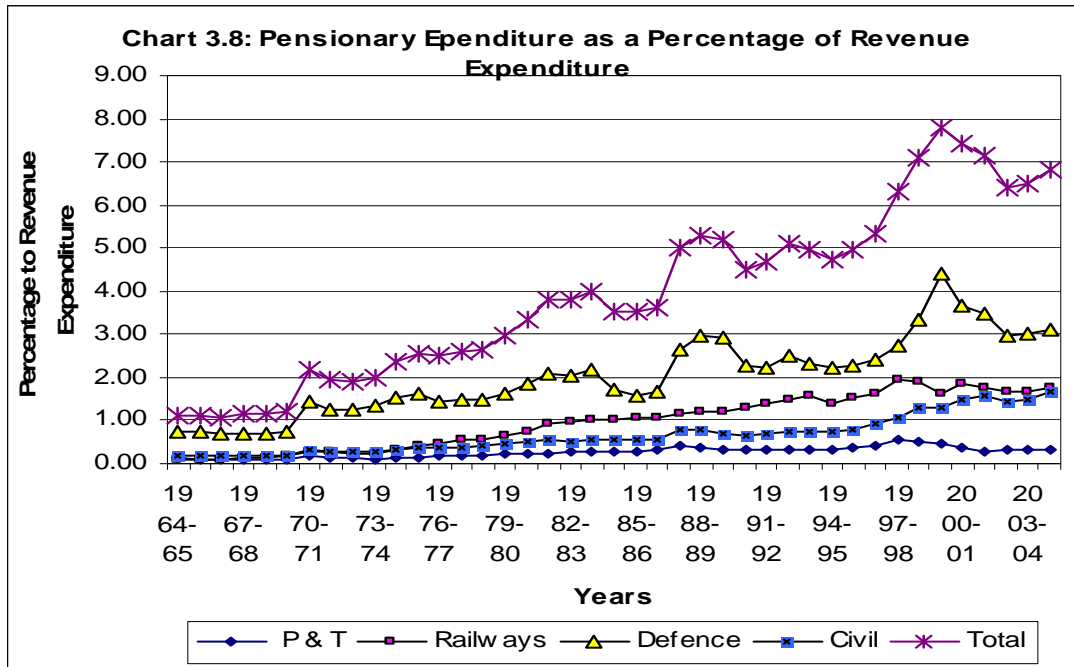
A close look at the graph reveals that, defence pension payments have largely influenced the total pension out go of the central government. The three other sectors have a similar movement until the early seventies after which Railways surged ahead of others however, the growth in the civil departments has been sharp from mid nineties to reach the level of Railways by 2004-05. The discussion on the number of pensioners presented in chapter four accounts for the fact that the civilian retiree numbers were at their peak during this period.

The broad trends in the pension expenditure terms of growth, percent to GDP, revenue receipts and revenue expenditure clearly indicate a considerable increase during the period under consideration, however, marked by peaks and troughs that are largely guided by the trends in the defence sector.

Factors leading to a sharp increase in pension expenditure:

Many countries have experienced a sharp increase in the pension related payments. Countries that have been providing social security to the old have been experiencing increased pension payments on account of the demographic transition resulting in

increasing numbers in the old age group. However, in Indian context governmental pension expenditure is largely on account of civil servants as the coverage under old age security is not very significant. In the context of central government civil servant pension in India, as stated earlier, there are largely two factors that have caused an increase in the pension related expenditure,– the employment base that would eventually turn into retiree base and the increase accorded to the pension payments over time. In Indian context, both the factors have been equally responsible for the sharp increase that has taken place in the recent years- the initial period marked by the creation of huge employment base that has now been adding to the growing retiree stock , and the liberal pension revisions effected by the Fifth pay commission. The impact of the Fifth Pay Commission recommendations as summarized in the Expert Committee report are presented in table 3.10.

Table 3.10: Impact of V CPC on Pension Benefits

Sl.No.	Pre-1996 Pensioner	Post – 1996 Pensioners
1	Ceiling on pension: Rs.4500 p.m.	Ceiling raised to Rs.15,000 p.m. (50% of the highest pay)
2	No parity in respect of old pensioners	Full parity of pension for pre-86 pensioners as on 1.1.86 and modified parity w.e.f. 1.1.1996 Pension raised to 50% of the minimum of the revised scale as on 1.1.1996 for all pensioners
3	Gratuity ceiling: Rs.2.5 lakhs	Gratuity ceiling raised to Rs.3.5 lakhs
4	Dearness Allowance not included for calculation of gratuity	Dearness Allowance included for calculation of gratuity
5	Commutation: 1/3rd of pension	Commutation increased to 40% of pension
6	Dearness Relief Neutralisation Pension 100% - Up to Rs.1750/- 75% - Rs.1751-3000/- 65% - Above Rs.3,000/-	100% neutralisation against inflation. Complete relief to pensioners/family pensioners on par with serving employees.
7	Family Pension rates were in slabs of 30%, 20% and 15%	Uniform rate of 30% of pay for all categories subject to a minimum of Rs.1,275/-
8	Family pension ceiling: Rs.1250	Ceiling raised to 30% of pay for all categories subject to a maximum of Rs.9,000/-
9	Dependent parents, widows/ divorced daughters not considered for family pension	Dependent parents, widowed/ divorced daughters included in the definition of family for purposes of family pension
10	Dearness relief for re-employed pensioners and employed family pensioners was not allowed earlier	Dearness relief allowed for re-employed pensioners whose pay was fixed at the minimum of scale and to all employed family pensioners
11	Medical allowance to pensioners did not exist	Medical allowance of Rs.100/- p.m. allowed for eligible pensioners not covered by CGHS

Source: Report of High Level Expert Group on New Pension System (Volume One: Main Report), Government of India, Ministry of Personnel, Public Grievances & Pensions (Dept. of Pension & Pensioners' Welfare), February 2002.

Creation of initial large employment base: Immediately after the independence and at the launch of the planning era, the government embarked on a massive expansionary role for which a huge manpower resource base was created to serve in various departments. However, an important trend discerned in the growth of past employment that offers clues regarding the future growth pattern of the number of annual retirees and the addition to the stock, is one of stagnation during the decade of eighties and a sharp decline in the numbers recruited during the last decade. Hence, while the initial huge recruitments would continue to churn out large number of retirees for few more years, there is bound to be a sharp decline thereafter. These issues are discussed in a greater detail in a subsequent chapter.

Life expectancy at sixty: The life expectancy at the age of sixty has been on the rise, thus extending the period of pension payments that are committed in nature. Life expectancy for males in India has increased from 11.8 years during 1951-61 to 15.7 years in 1995-99 and that of females has increased from 13 years to 17.7 years during the same period. (Table 3.11)

| Table 3.11: Expectation of life at Sixty years			
Period	Male	Female	Persons
1951-61	11.8	13.0	N.A
1961-71	13.6	13.8	N.A
1970-75	13.4	14.3	13.8
1976-80	14.1	15.9	15.0
1981-85	14.6	16.4	15.4
1986-90	14.7	16.1	15.4
1991-95	15.3	17.1	16.2
1995-99	15.7	17.7	16.7

Source: Bose, A.B, 2006   Social Security for the old: Myth and Reality

Pension Revisions: The practice adopted in the country until now is to provide for both price and wage indexation**.** While the price indexation occurs every six months that of wage revision has been until now taking place once in ten years**.** Government of India has until now implemented recommendations made by Five Central Pay Commissions, and the Sixth Commission is due to make its recommendations by April 2008. While the hike in expenditure on account of price indexation has been contributing to the gradual increase in pension payments that of pay revision has generally resulted in a sort of peak for a few years following the implementation of pay commission recommendations after which although there is a decline, the expenditure has been at a higher level. In particular the increases effected by the fifth pay commission were of a much bigger order than the earlier ones. Defence sector has been an exception to this as the large increases were noticed during the third pay commission period itself, and since the sector constitutes more than fifty percent of the total pension payments, the overall growth trend has been largely guided by the changes in the defence sector. Yet another interesting aspect to be noted is that while railways has always been the second highest in terms of the share in total, after the fifth pay, the share of the civil departments has surged ahead and matched that of the railways in the recent years. It is interesting to note from the table 3.12 that the average pension payments corresponding to each of the pay commissions have been on the increase from one to another, with that of the fifth pay much higher than the previous ones Chart 3.9).

Indexation procedures as observed earlier (table 2.3) vary across nations, while some follow only price indexation for pension payment, United Kingdom for instance which has largely shaped the civil servant pension system in India is one among them. Other procedures such as only wage indexation and a combination are pursued in some other countries. India, is one among those where both price and wage indexation is practiced and as a result the pension provisioning appears to be more liberal in the country. However, the 'Replacement rate' in India in India appears to be lesser than many other nations (table 2.2)

Table 3.12: Pay Commission wise annual average pension expenditure (Rs in crores)					
Pay Commissions	Posts and Telecom	Railways	Defence	Civil Depts	Total
II Pay Commission (1-7-1959)	4.21	5.84	31.68	7.35	49.09
III Pay Commission (1-1-1973)	28.22	94.3	220.53	59.00	402.05
IV Pay Commission (1-1-1986)	244.18	965.39	1699.74	512.83	3422.14
V Pay Commission (January 1996)	972.43	4518.05	8386.42	3604.63	17481.52

Chart 3.9: Pay commission wise annaul average pension expenditure
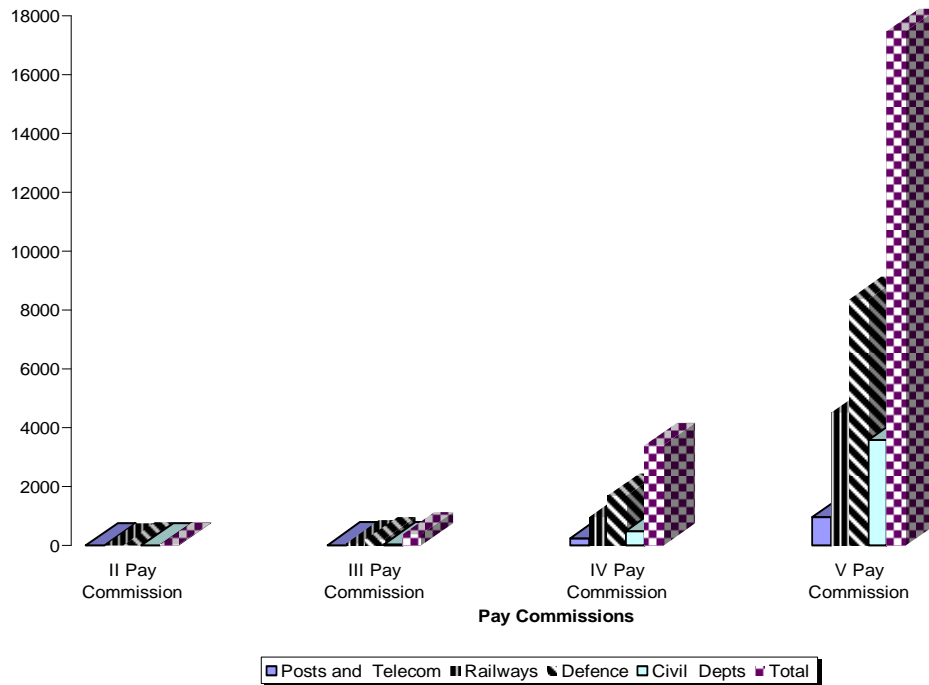
CHAPTER 4
PENSION EXPENDITURE PROJECTIONS

Civil servant related employment costs are long lasting costs that stay typically for almost 60 to 80 years; initially as wage costs and after retirement as pension payments. The latter are entirely borne by the government under the Pay As You Go (PAYG). Civil servant pensions in Indian context are currently based on the (PAYG) system for the employees recruited before 1-1-2004 (i.e. until the introduction of the New Pension Scheme) and the defence sector employees. Wage and pensions being in the nature of committed expenditure, normally they reveal a constant increase unless and until the commitment itself undergoes some change, which is a very rare phenomenon given the rules governing the recruitment.

In this chapter an attempt is made to project the pension expenditure of the central government employees of the Old Pension Scheme (OPS).While it is very important to have an understanding of the growth and behavior of committed expenditure in the future times in planning expenditure, the projections themselves may not be very realistic unless and until based on accurate past data. In the absence of such data methods can be devised to estimate the same using a proper set of assumptions, which means the closeness of the estimates to reality would largely depend on how realistic are the assumptions

Projections are presented in a subsequent section, however with the following caveats:

- Sound past data base is an important prerequisite to arrive at meaningfully realistic future estimates. In the present context, there were serious problems in getting data pertaining to the number of pensioners, their annual turn out, their stock, age distribution, and the wastage. These problems have been amply highlighted in earlier attempts to estimate the future pension liabilities[11].The Working Group has suggested the format in which the data has to be maintained for pensioners, the action taken in this regard is not known. While some details

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[11] Government of India, The Working Group, 2001; Government of India, The Expert Committee, 2002; Swain, Sibani, and Pranob Sen 2004.

are available from the decade of nineties, the time period is too short to make any forecasts for three to four decades.

- Alternatively, the exercise is based on the employment data from which the data pertaining to the retiree numbers are drawn based on meaningful and widely accepted assumptions. These are[12]:

  - ➢ Largely all those who join government service would continue until retirement.[13]

  - ➢ The employees who join government service put in an average 33 years of service

  - ➢ The retirement benefits are enjoyed by the persons who have served the government i.e. the employee pensioners, for twenty years, with five percent of them getting wasted every year.

  - ➢ Family pension is enjoyed by the families for ten years with ten percent of them getting wasted every year.

  - ➢ Totally, pension liability would last approximately for thirty years[14]

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[12] These assumptions were used by the Working Group, GOI 2001 on account of lack of reliable data and the present study has adopted the same assumptions as the data problems persist till date.

[13] A small percentage of employees do take voluntary retirement or leave government service on account of mental or body related infirmity, however, these are not considered for the purpose of the present study due to non availability of data.

[14] Actuarial estimates prepared by a professional actuary who has used the LIC life tables finds that the liability lasts a little longer than the present study's estimates, however, a comparison of the actuarial estimates with that of the present study reveal that the size of total financial liability after the thirty year period is not very substantial.

Methodology:

Methodology adopted for estimating the fresh recruits has been largely taken from Sen, Pranob and Sibani and Swain (2002) with some modifications and the same is presented below.

The design of an analytical framework towards forecasting future retirement benefits liability to be borne by the Govt. of India needs some careful selection of variables as well as assumptions enumerating the selection of variables. The first requirement is essentially to have a long series of past information related to retirement benefit payments. Since the projections to be made are not entirely a sum of money but a product of sum of money and 'a' number reflecting the total number of beneficiaries[15], the information should be available 'subject' wise, viz. the number of retiree stock each year or atleast the average per-retiree pensionary expenditure. The irony is, and we re-iterate what earlier working group, expert committee and other studies have underlined; existing database is constrained by very little detailed information towards retirement benefit payments and large gaps continue to exist in relation to both details relating to current pensioners and the number of new retirees.

In this drawback, the information on the number of new retirees each year and the total retiree stock have to be determined from the available information relating to the total number of govt. employees. The sum total of the number of employees working under the Govt. departments: (i) civilian department; (ii) Post and telecommunication; (iii) Railways and (iv) Defence; are taken into account while determining the total number of current and past Govt. employees. We follow the theoretical model developed by Sen and Swain (2002) to find out the attrition rate and applying the same cull out the number of retiree each year. We extend their model further to find out the total number of fresh recruitments each year and use the figures in projecting our future new retiree numbers and hence the retiree stock in the subsequent periods.

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[15] The total stock of retirees enjoying / entitled to such contributory retirement benefits schemes for that year.

The theoretical model as presented by Sen and Swain (2002) was basically aimed at criticizing the 3 percent attrition rate for the Govt. employees as assumed by the Fifth Central pay Commission (5th CPC). They argued that under a set of assumptions relating to total number of years in service, the prevalence of in-service death and the nature of early exit from occupation vary across departments. They have however taken a more notational route to derive out the retirement rate and attrition rate separately and than applied the department wise assumptions to test their hypothesis that varying department conditions affect both retiree number and the total retiree stock empirically[16]. We will first present the theoretical model briefly as developed by them, and than try to arrive at the number of fresh recruits. Next, we will state the different assumptions department-wise and finally present our empirical results.

The very starting point of the model is to assume that all the figures relating to total number of fresh recruitment at the end of a year, number of retirees during that year and the total number of in-service deaths reported during that year has a relation with the total number of employment and hence with the figure indicating the net addition to total employment. The net addition to the number of govt. employees in a given year can be written as:

$$\Delta L = (L_i - L_{i-1}) = F_i - R_i - D_i \qquad (1)$$

Where: L_i = Total number of employees at the end of the ith year

F_i = Total number of fresh recruits in the ith year

R_i = Total number of new retirees in the ith year

D_i = Total number of reported in-service deaths in the ith year

Based on the age distribution of the government employees and their mortality expectations, average in-service death rate is assumed to be a factor δ and hence in-service death rate can be written as:

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[16] The Sen and Swain (2002) provide the theoretical framework and also presents their calculation pertaining to Central Govt. (civilian) employees. The analysis of Railways, Defence, Post and Telecommunications departments are available in Sen and Swain (2004).

$$D_i = \delta . L_{i-1} \tag{2}$$

Thus we can write equation (1) as:

$$(L_i - L_{i-1}) = F_i - R_i - \delta . L_{i-1}$$

Dividing both sides of this above equation by L_{i-1} we get:

$$(L_i - L_{i-1}) / L_{i-1} = l_i = f_i - r_i - \delta \tag{3}$$

Where: l_i = employment growth rate in the ith year

f_i = percentage of fresh recruits in the ith year

r_i = percentage of new retirees in the ith year

But since equations (1) and (3) are more of identities, they are not useful for projecting the number of retirees. Also, we do not have any information regarding the growth rate of fresh recruits as well as the growth rate of the number of new retirees. Hence, both these information should be based again on the observed data. The theoretical model proposed by Sen and Swain (2002) had chosen those variables, which were available. In doing so, they have assumed the average length of service in govt. employment to be 'λ' years and hence assumes further that "the survivor of a given cohort of fresh recruits will retire simultaneously after 'λ' years". In service death rate of δ prevails over this period of time and at the end of the period, (1- δ. λ) percent of the concerned cohort survives. Thus, the number of retirees for the ith year can be written as,

$$R_i = (1 - \delta . \lambda) F_{(i-\lambda)} \tag{4}$$

where, $$F_{i-\lambda} = \Delta L_{i-\lambda} + \delta L_{i-\lambda-1} + R_{i-\lambda} \tag{5}$$

Substituting the value of $F_{i-\lambda}$ in equation (4) would give us the predicted number of retirees in any given year on the basis of past employment and retirement data. To arrive at the retiree growth rate or the retirement rate, we divide equation (4) by L_{i-1} after substituting for $F_{i-\lambda}$. We obtain:

$$r_i = (1 - \delta . \lambda)[g + \delta + r_{i-\lambda}] / (1 + g)^{\lambda} \tag{6}$$

where: g = average growth rate of the number of government employees over the period

$(i - \lambda)$ to i.

Sen and Swain (2002) has went a step ahead in fine tuning their number of retirees and the retirement stock taking into account the possibility of unavailability of long time series on actual retirement data. In such a situation, an alternative methodology have been developed aimed towards projecting the retirement rate via considering that government employment follows a steady-state growth path (i.e., g_i = g). The retirement rate so obtained is:

$$r_t' = (1 - \lambda.\delta)(g + \delta)/\{(1 + g)^\lambda - (1 - \lambda.\delta)\} \qquad (7)$$

The total attrition rate of the government work-force in a given year is the retirement rate plus the assumed in-service death rate during the year. Therefore, attrition rate is given as:

$$a_t' = r_t' + \delta \qquad (8)$$

or,

$$a_t' = \{(1 - \lambda.\delta)g + \delta(1 + g)^\lambda\}/\{(1 + g)^\lambda - (1 - \lambda.\delta)\} \qquad (9)$$

There are two advantages in using this methodology developed by Sen and Swain (2002). First, the calculation of the retirement rate [Equation (7)] as well as that of the attrition rate [Equation (8)] doesn't require past data on retirement. Secondly, the assumption of steady state employment growth pattern allows for flexibility and one can test for validity of 3 percent attrition rate assumed by the Fifth Central Pay Commission. It is to be noted from equations (8) and (9) that:

$$g \to 0 \quad \begin{cases} r_t' \to (1 - \lambda.\delta)/\lambda \\ and \\ a_t' \to 1/\lambda \end{cases} \qquad (10)$$

Some indicative figures of retirement and attrition rates given by the model at different growth rates using λ to 33 years and δ to be 0.32 percent are presented in the table below (to given an appropriate No.).

Table 4.1: Retirement and Attrition Rates at Different Employment Growth Rates

Rate of Growth of Employment	Retirement Rate	Attrition Rate
-3.0%	4.51%	4.83%
-2.5%	4.20%	4.52%
-2.0%	3.92%	4.24%
-1.5%	3.65%	3.97%
-1.0%	3.41%	3.73%
-0.5%	3.41%	3.73%
0.0%	2.68%	3.00%
0.5%	2.55%	2.87%
1.0%	2.36%	2.68%
1.5%	2.17%	2.49%
2.0%	1.99%	2.31%
2.5%	1.82%	2.14%
3.0%	1.66%	1.98%
3.5%	1.51%	1.83%
4.0%	1.38%	1.70%

Adopted: Sen and Swain (2002); Table No. 1, p 11.

We have extended the model as constructed by Sen and Swain (2002) to find out the number of fresh recruits each year. The steps are as under:

From equation (1) we have,

$$\Delta L = F_i - R_i - D_i \qquad \text{or } F_i = \Delta L + R_i + D_i \qquad (11)$$
$$\text{or,} \qquad F_i = \Delta L_I \left(1 + r_i^{'}\right) + L_{i-1}.a_i^{'} \qquad (12)$$

Since we already have the retirement rate and attrition rates (i.e., $r_i^{'}$ and $a_i^{'}$), we can now easily calculate the total number of fresh recruits in the ith year. The fresh recruitment

figure will be used for our future retiree stock projections. We now briefly present the department wise assumptions towards calculation of retirement rate; attrition rate and lastly the number of retirees each year and the number of fresh recruits.

Central Government Civil Departments; Dept. of Post and Telecommunications:-

The assumption for in-service death rate and the number of years in service is assumed to be same across the three civilian departments' viz., Central Govt., Post and Telecommunications. Since, these are considered mostly office jobs with less exposure to hazardous working atmosphere, length of service is assumed to be fairly long and on an average to be 33 years. Since it is assumed that most of the employees would serve for the full tenure of their service, on an average in-service death rate is expected to be high. This is one of the reason behind assuming an in-service death rate of 0.32 percent.

Railways: -

Most of the Railway employees belongs to the Group C and Group D categories, and render heir services either on-board inside the train or in remote location, hardly having any provision for catering to the basic needs like health and education facilities for their families/family members. In most cases they are compelled to stay away from their families. These are some of the reasons behind the thought that railway employees would opt for early exit from their employment. It is therefore assumed that at least 25 percent of the total employee would opt for voluntary retirement after 20 years of mandatory service period to be entitled for pensionary benefits. At the same time, 75 percent of the employee would work till 33 years. Thus, on an average, an employee would render service for a period of 30 years. The assumption that 25 percent of the employees voluntarily leave the job after 20 years of service, it is expected that a very young working cohort with an estimated death rate of 0.28 percent, less than the normal 0.32 percent, can be expected for railway employees. Assumption while calculating the retirement rate implies that higher employment growth rate is the preceding 30 years would lead to lower retirement rate and vice – versa.

Defence: -

Defence employees can be classified under two different categories: (a) Commissioned Officer and (b) Personnel Below Officer Rank. The Commissioned Officers average year of service would be less than that of civilian employees due to younger age of retirement. It is assumed that on an average the total number of years of service rendered by a CO would be 30 years. In compassion, the defence employees under the classification Personnel Below Officer Rank would serve for an average period of 20 years. PBOR constitute almost 85 percent of the total defence employment. They generally entered the armed forces at an early age and also leave the job at an early age. Thus, on an average, they provide service to the nation while being in the younger age cohort with a significantly lower 'normal' in service death rate. But, based on empirical evidence, especially the last 10 years figures given by the defence pension accounts office; suggest in-service death rate to be around 102 percent. It is however important to underline that Defence employees are excluded from the New pension scheme and they are still covered under the defined benefit scheme. In this regard, the voluntary retirement assumed to be around 1.5 percent each year becomes a crucial assumption. In defence service, in general retirements are categorized under as voluntary retirement, invalid retirement and compulsory retirement.

Pension projections: A review of available estimates:

Civil servant pension payments for the central government employees have been estimated by three studies-the Working Group (2001) the Expert Group (2002) Sibani and Panob Sen (2004). The pension projections up to 2009-10 made by the three studies[17] vary from one another (Table 4.2). While the Working Group estimate reveals an annual average growth of 4.6 percent placing the pension liability at Rs 29,891 crore, with a six percent inflation, that of Expert Group reveals a growth of 4.8 percent with the pension liability being estimated at Rs 32495 crore. Sibani and Swain's study which has attempted an improvised methodology estimates the pension bill to be Rs 36706 crore which has revealed a compound annual growth rate of 8.1 percent.

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[17] The Expert Group has made projections for a period of 80 years

Table 4.2: Available Retirement of pension projections					
Years	Working Group		Expert Group	Sibani and Pranob Sen	
	Total	Total Net of Defence	Total*	Total	Total Net of Defence
1999-00	N.A	N.A	N.A	16875	8442
2000-01	20471	10233	N.A	18684	9641
2001-02	21368	10975	22272	19995	10400
2002-03	22303	11759	23432	21347	11200
2003-04	23234	12533	24625	23026	12032
2004-05	24188	13334	25850	25020	13122
2005-06	25200	14197	27109	27038	14152
2006-07	26273	15125	28402	29170	15229
2007-08	27405	16100	29730	31524	16454
2008-09	28595	17136	31094	33923	17696
2009-10	29891	18283	32495	36706	19145

Source: Government of India, 2001.2002: Sibani and Swain, 2004

Pension projections: Civil Departments

The present study has analyzed the past pension expenditure for each of the five sectors-Civil, Railways, Posts, Telecom and Defence for the last forty years which is presented in chapter three. The long past series of sector wise disaggregate pension expenditure data can not be used for making future projections for the simple reason that the aggregate pension expenditure is dependent on the number of pensioners, which is not a constant number but varies depending on the corresponding past employee size and the size of pension bill which varies based on the price and wage indexation related changes effected

from time to time. The Working Group projections are based on the aggregate pension expenditure, adjustments are made for three different inflation rates. The implicit assumption is that the number of pensioners remains the same. Sibani and Sen's study has incorporated some methodological improvements where in they work out the pension bill by various categories of pensioners such as survivor pensioners, switch over family pensioners and fresh family pensioners. The underlying logic for the same being, the pension pay outs are not uniform across all the categories and thus there could be variation in the total pension bill when adjustments are made for each of the categories. However, the pension projections are based on the stock of pensioners as available in 1999-00.

Unlike the earlier studies, the present study has attempted to take in to account the retiree numbers and their future behavior in estimating the total future pension bill. In doing this, per capita pension payments have been worked out, and the projections based on these are adjusted for both inflation and the likely pay revision.[18]

Stock of Pensioners:

As explained elsewhere in the report the pension liability is a direct outcome of the number of pensioners and the revisions effected to the pension bill on account of price and wage indexation. It has also been observed earlier on that the impact on account of the latter, i.e the wage indexation effected by the Fifth pay commission during mid nineties had a very significant impact on the pension payments. It is very interesting to learn from Chart 4.1 that the total stock of pensioners was at its peak coinciding with the fifth pay commission period and continued to be above 2 lakh level until 2016-17 after reaching its peak level in 2005-06 (civil departments also reach their peak level in the same year, while the railway retiree stock reached its peak in 2013-14) The decadal growth rate presented for the stock of pensioners reveals a positive but declining growth rate for the civil departments until 2004-05 after which it reveals a negative growth rate, where as the stock of railway retirees was positive but on the decline until 2014-15 after which it turned negative. Hence, the huge increase to the total pension bill was merely not on account of pay revision but was coupled with increased numbers causing a

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[18] Details are presented in the note on methodology.

significant increase in the total pension bill. As it has been observed in the analysis pertaining to the growth in government employment, the huge intake which happened in the early decades after independence did not reveal the same behavior in the decades of eighties and nineties

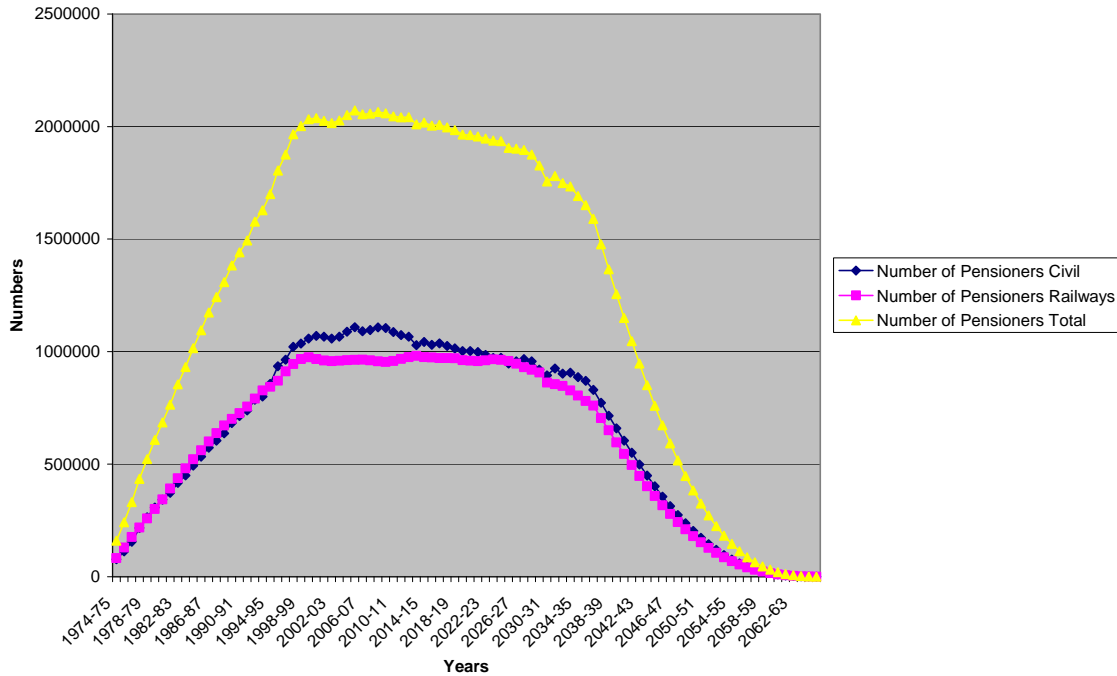**Chart 4.1: Number of Pensioners: Civil departments**

Table4.3 : Decadal Growth rate			
Year	Civil	Railways	Total
1984-85	16.42	16.35	16.41
1994-95	5.36	4.67	5.01
2004-05	2.34	1.29	1.84
2014-15	-0.45	0.14	-0.16
2024-25	-0.70	-0.13	-0.42
2034-35	-0.96	-1.81	-1.37
2044-45	-8.29	-8.48	-8.38
2054-55	-18.09	-17.94	-18.02
2064-65	-71.48	-61.87	-66.16

Source: Estimated

Pension Liability:

It has been observed in Chapter three that the central government pension bill had increased sharply until 2004-05 in its absolute level, as well as in relative terms as a percent of GDP. Pension liability on account of the employees under the old pension scheme would continue for a long period i.e. until 2065-66, in addition, the pension bill would increase substantially until the time period 2036-37 (Chart 4.2). However, subsequently, the total pension bill would decline. The chart portrays the pension liability projections by individually taking into account only the effect of inflation and taking the combined effect of price effect and the likely wage indexation that happens with every pay commission. It is interesting to note that price indexation coupled with a three percent revision could nearly double the pension bill. The liability projections are based on the assumption that pay commission revisions would be effected once in every ten years and hence there would be six more pay commissions before the entire retiree stock under the old pension scheme gets cleared.

Chart 4.2: Civilian Department pension projections with alternative wage and price indexation levels
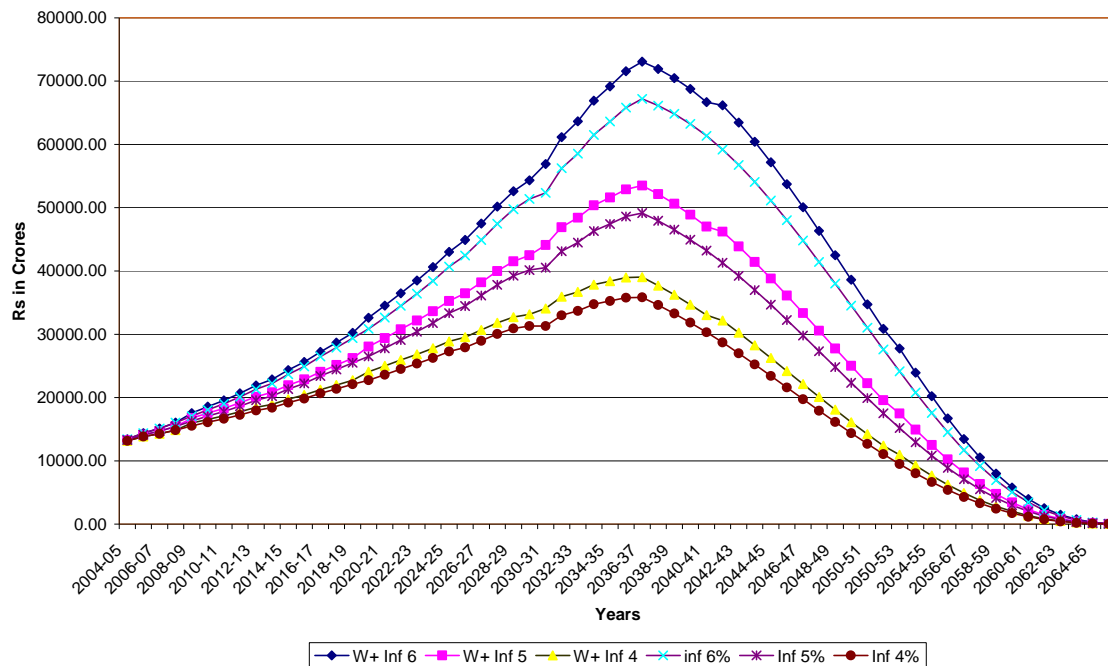
Table 4.4: Civilian Department pension liability: Decadal Growth Rates			
Year/Infl ation rate	4 %	5 %	6 %
2014-15	10.62	13.54	16.07
2024-25	11.76	14.66	17.18
2034-35	8.45	11.39	13.94
2044-45	-10.36	-7.23	-4.52
2054-55	-36.6	-33.2	-30.26
2064-65	-173.04	-168.22	-164.15

The decadal annual average growth rates presented in table 4.4 reveal that while the growth rate is high and positive but on the decline until 2034-35, after which the liability reveals negative growth rate.

Pension payments as percent of GDP:

The pension projections with the above assumptions as percent of projected GDP (available until 2050) reveal that (chart 4.3) the liability would range between 0.53 percent and 0.54 percent until 2027-28 after which they decline as a percent of GDP. It can also be observed that the increase is not abnormal. Two factors explain the behavior, first, the number of pensioners on whose account the government has to make payments is on the decline, secondly, the economy is projected to experience good growth.

Chart 4.3:Pension projection as a percenmt of GDP with alternative wage and price indexation levels
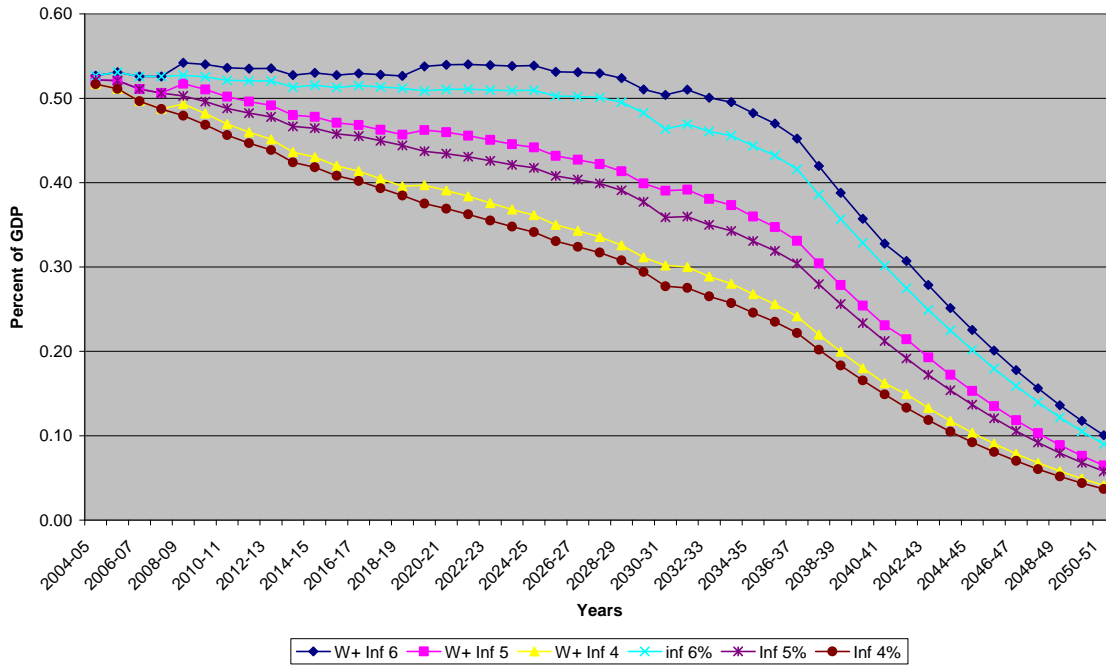
Pension projections: Defence Sector:

Defence sector expenditure would continue to have an increasing trend (Chart 4.4) on account of the fact that the sector continues to be under the Old Pension Scheme. However, as a percent of GDP, the increasing trend continues only with six percent inflation and a three percent wage revision. At lower inflation levels the expenditure as percent of GDP is revealing a declining trend. (Chart 4.5)

Chart 4.4: Defence sector Projected pension liability

Legend:
- 6 %Inf+wage
- 5%Inf+wage
- 4 %Inf+wage
- 6 percent
- 5 percent
- 4 percent

X-axis: Years
Y-axis: Rupees in crores
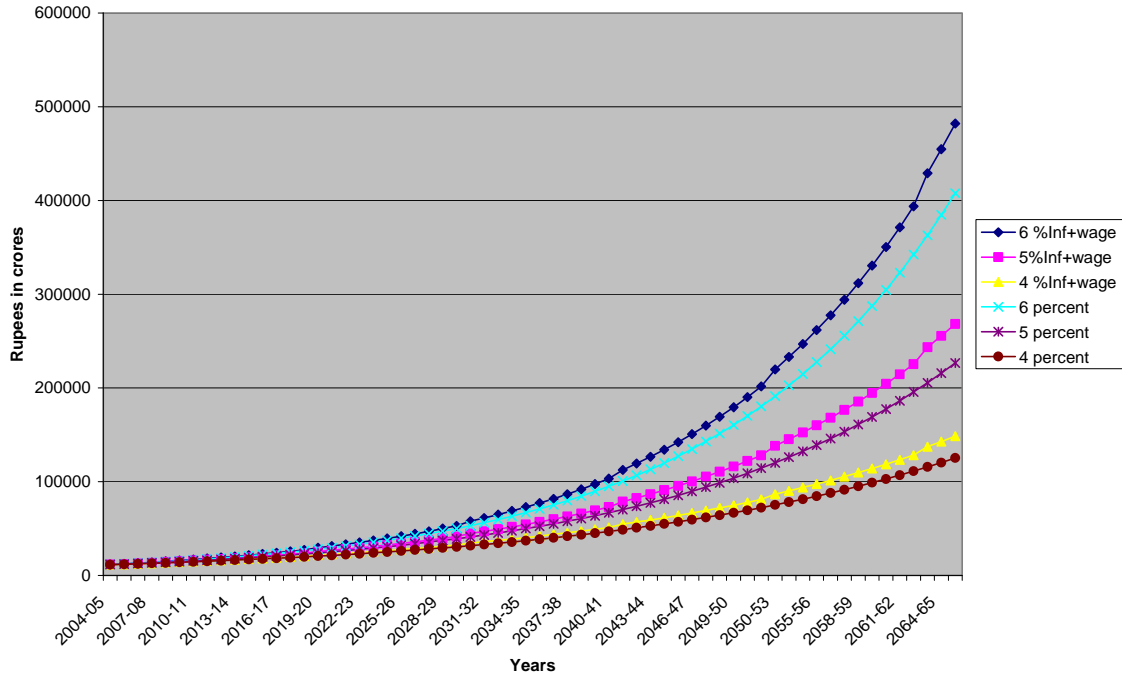
Chart 4.5:Defence sector pension liability as apercent of GDP

Legend:
- 6 %Inf+wage
- 5%Inf+wage
- 4 %Inf+wage
- 6 percent
- 5 percent
- 4 percent

X-axis: Years
Y-axis: Percent to GDP

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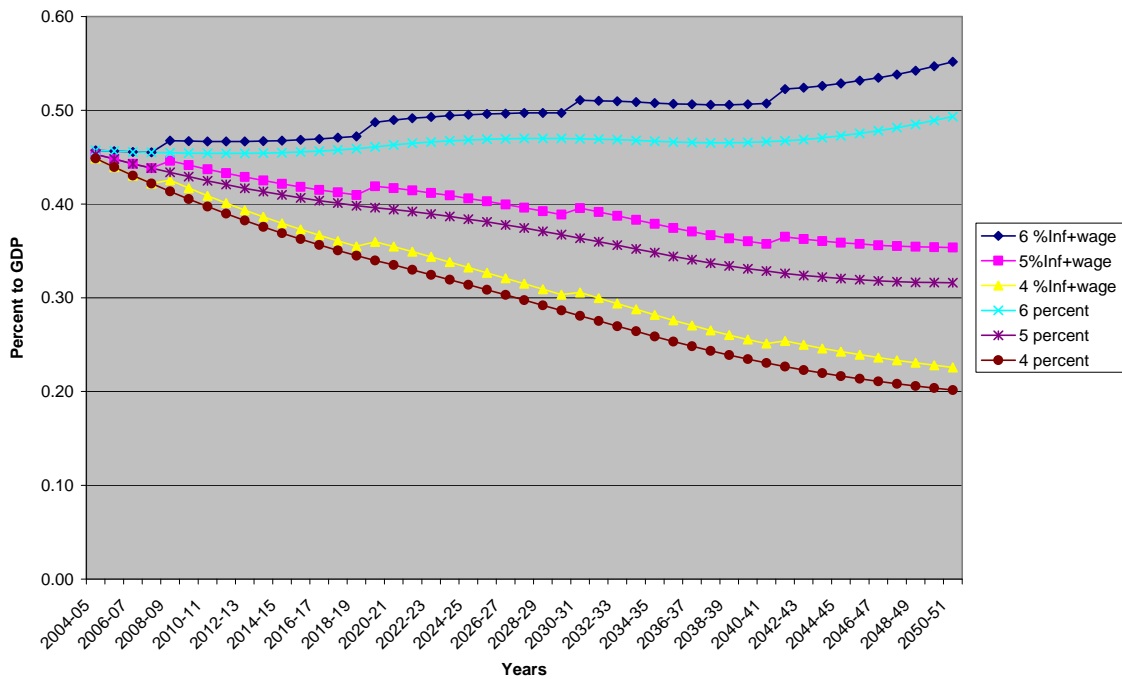
Civilian and Defence sectors:

The projected liability by Civil and defence sectors is revealed in charts 4.6 and 4.7.

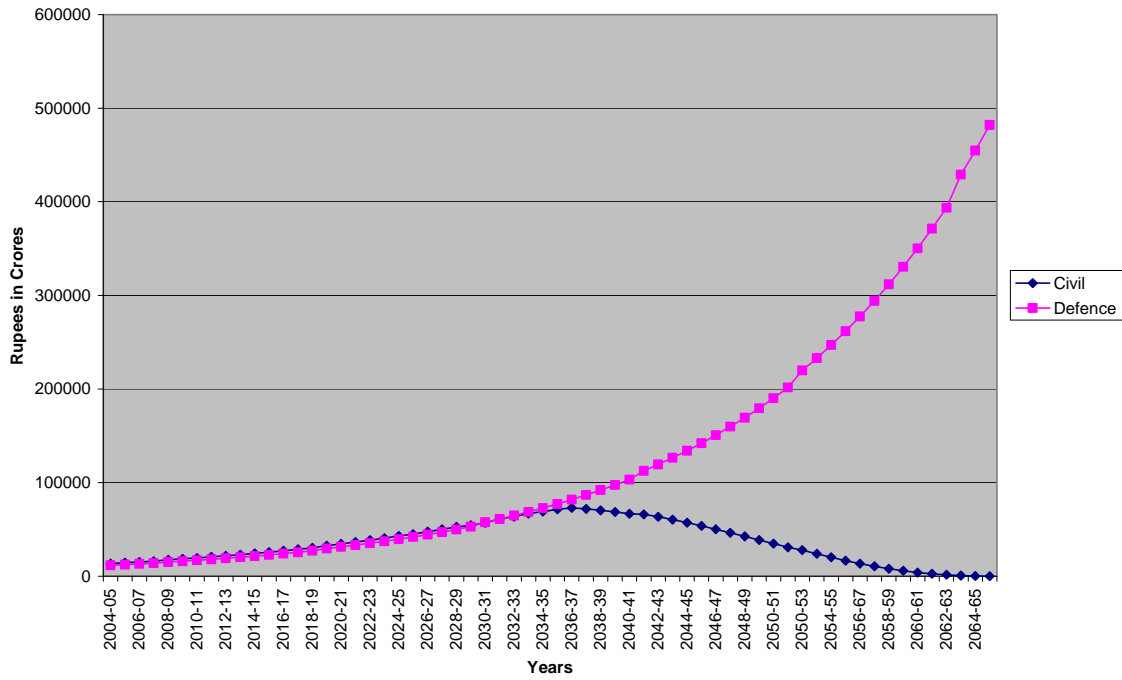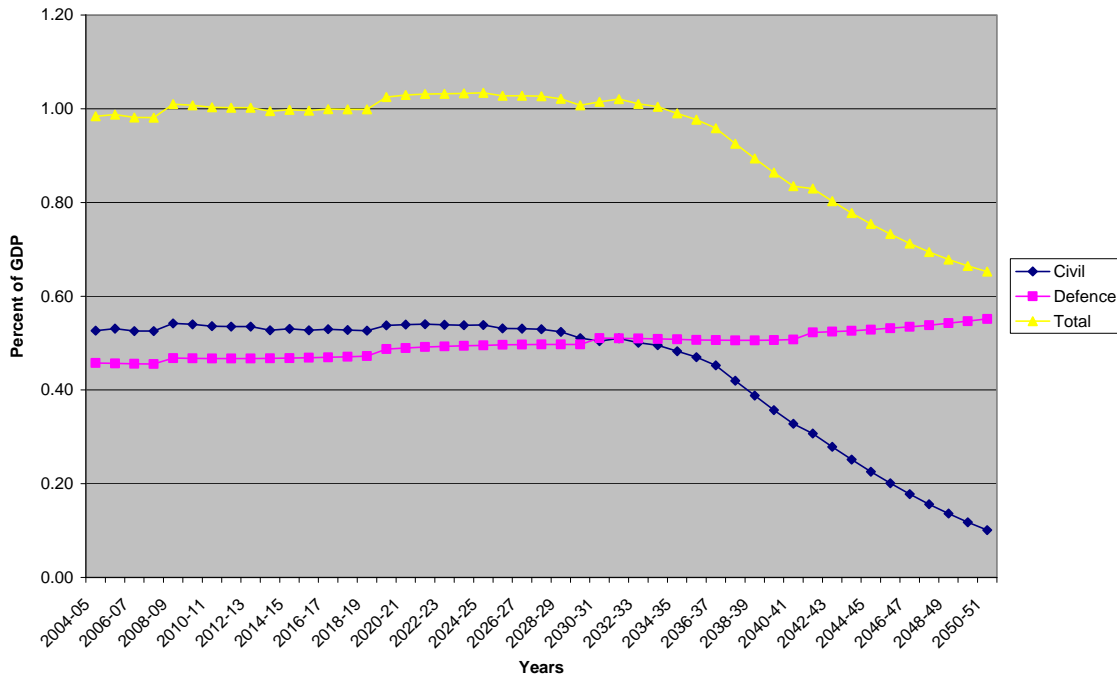**Chart 4.6: Pension liability Projections:Civilian and Defence Sectors**

Chart 4.7: Total liability as percent of GDP

Conclusions:

The retiree population stock under the old pension scheme has had a considerable increase from mid ninties; however, the declining trend has already set in. The big retiree stock coupled with the liberal pension revision implemented due to the Fifth Pay Commission recommendations resulted in a huge increase in the pension liability. In the event both the price indexation and wage indexation are here to stay in future times, there would be two to five times increase (depending on the size of inflation coupled with wage revision) in the total pension bill by 2036-37, after which the pension liability would reveal a decline even in the absolute size. The pension liability on account of the retirees under the old pension scheme would come to an end by 2065-66. While the absolute increase in the pension bill is quite sizeable, the Indian economy is poised to have a good growth; as a result, the pension bill in proportion to projected GDP is not very alarming which ranges between 0.53 and 0.54 and would steadily decline after 2027-28.

However, the liability on account of the defence sector would increase in absolute terms but as a percent of GDP reveals a declining trend other than at six percent level of inflation coupled with a three percent wage revision.

CHAPTER V

## MEETING THE PENSION EXPENDITURE: SOME ALTERNATIVES

There has been a growing concern about the manner in which the huge and growing pension bill can be met with out adversely affecting the fiscal sustainability. The analysis presented on the projected pension bill accounts for the fact that the future central government pensionary expenditure in absolute terms would be significant, however, in terms of its share in the GDP is on the decline. In addition, the government has already initiated the New Pension Scheme (NPS) to take care of the future pension liabilities arising on account of the employees recruited from 1-1-2004. The future expenditure implications as per the Expert Committee analysis under the NPS amount to no immediate reduction in the near future however would start yielding long term benefits i.e after about 35 years. Nevertheless these benefits would outweigh the cumulative costs of the initial 35 years in a span of just sixteen years (Mukesh Anand and Rajeev Ahuja, 2004). The current concern is of the stock that has accumulated until the end of 2003 and their future pension outgo and that of the defence personnel who have not been brought under the NPS and ways and means to meet the expenditure in a sustainable manner.

The observed trends:

It has been observed earlier that the two key factors that have had an impact on the growing employee related costs inclusive of both the pay and allowances and the pension related expenditure pertain to the huge intake of government employees in the initial years of the planned development of the country which is coupled with a sharp increase in the size of pay and other allowances over a period based on revisions recommended by the pay commissions from time to time. It has been observed that there has been a considerable decline in the pay and allowance related costs on account of smaller increase that has been taking place in government employment, as result of the smaller intake, the future retiree numbers would be in accordance with that of the past employment pattern.

It has also been observed that the overall past trend and behavior of the pension liability was largely influenced by the defence sector.

The past and future pension liability (after adjusting for both wage and price increase) for the employees under the Old Pension scheme is presented in Chart 5.1 as a percent of GDP reveal a considerable decline after peaking in late nineties.

Chart 5.1: Past and future Pension Liability as a percentage to GDP
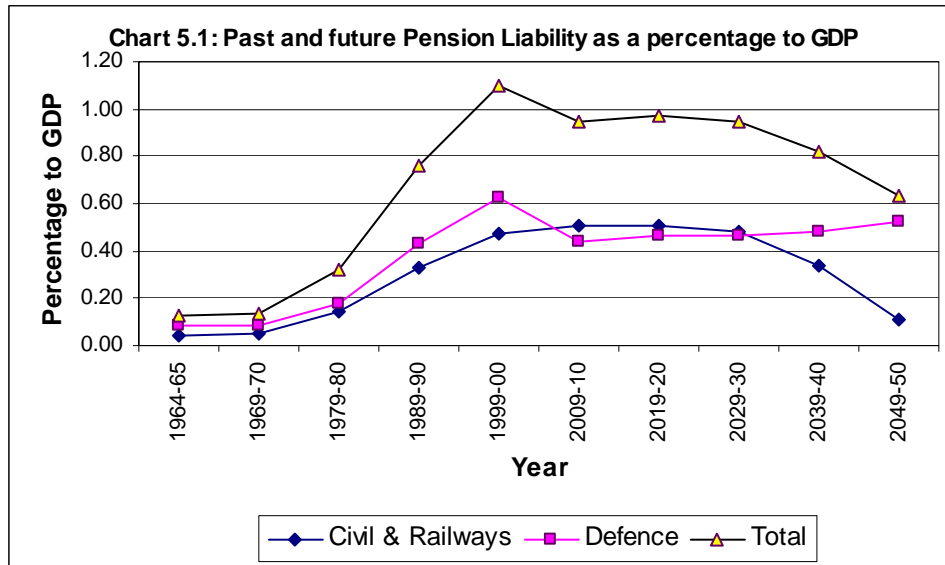
Meeting the projected pension payments: Some ways and means:

While the fact remains that the projected pension costs are not alarmingly high given the expected robust growth of the economy and the short nature of the period during which the huge payments are to persist, an attempt has been made in the following sections to study if there are any alternative ways of meeting the expenditure in a fiscally sustainable manner.

Reforms to reduce pension liabilities include (Robert Palacios and Edward Whitehouse, 2006):

- Raising pensionable age (but with care for the consequences for pension liabilities and public sector pay)
- Reducing the replacement targets
- Extending averaging periods in the benefits formula
- Indexing benefits in payment to prices rather than civil service earnings

- Introducing or increasing member contributions

Table 5.1: Recent reforms in civil service pension schemes in OECD countries

Reform	Countries
Increase in pension age	Finland, Sweden
Restrictions on early retirement	Germany, Italy, Sweden
Reduced pension generosity or Increased service requirement	Austria, France, Germany, Greece Finland, Portugal
Change in updating procedures	Italy, Sweden
Integration of civil service with General state scheme	Austria, Greece, Spain
Increase in contribution rates	Austria, Finland, Greece, Italy, Netherlands, Portugal, Sweden
Introduction of some form of Pre funding	Belgium, Denmark, Finland, Italy, Sweden
Source :Robert Palacios and Edward Whitehouse, 2006,p 37	

Reforms in the civil servant pension need to be addressed with great caution. "Reforming civil service pension entails different challenges than reforms to national pension schemes. The fiscal impact of certain parametric reforms to a civil service pension scheme must look at both the pension and wage bills. For example, in the case of an increase in the retirement age, savings in the pension scheme may be offset by higher wage payments. Simulations should take into account the ancillary effect on the wage bill and not only the finances of the pension scheme itself." (Robert palacios and Edward Whitehouse, 2006, p 73-74)

A review of the ways and means used by which other countries facing similar problems across the globe reveal that largely the measures of two types, reduction in the liability by way of parametric changes and shifting towards greater pre funding obligations.[19]

While the parametric changes are in the nature of temporary relief measures to reduce the burden, the popularly recommended method of meeting the future pension liability in a sustainable manner is by way of pre funding, the returns from the investments made with the fund resources are used to make the pension payments. New pension scheme is already in vogue in India for the government employees of the civilian departments who have joined service from 1-1-2004.

The present report does not however get into any discussion on the issues regarding the merits and demerits of the various reforms currently used, and also would not venture to make any recommendations but attempt only an exercise to estimate the pre funding requirements to meet the liability arising for the civilian department pertaining to the old pension scheme in a sustainable manner. This is in view of the fact that these reform initiatives need a careful study and should be very specific to the context. It is stated, "The necessity of serious reforms in many countries tells us nothing about which specific reforms should be undertaken in which countries. Unfortunately, evaluations of such reform options have too often been clouded by a set of myths that have dominated public discussions and derailed rational decision making." (Peter R Orszag and Joseph Stiglitz, 1999, p4).

The services of a professional actuary have been used in estimating the prefunding requirement.[20]

Present value of pension liability

As a first step, analysis of the net present value of pension liability has been calculated at varied rates of interest to arrive at the kind of pre funding required for the purpose. It can

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[19] The Expert Committee gives a good account of the kind of reform initiatives introduced in other countries.

[20] The actuary report is presented in Annexure 1.

be observed from table 5.2 that the net present value of the projected liability is Rs 3, 35,628 crore based on assumed rate of return of 8 percent, and the same is of a much bigger size at lesser rates of return. A fund of this magnitude would help the government meet the pension payments from the returns of the fund, and help avoid earmarking resources on an annual basis for the mounting pension outgo that takes place on account of the Pay As You Go system that currently happens with each budget. However, the question needs to be addressed as to how far it is feasible and how to mobilize the kind of resources required for the purpose of investment, to make the pension payments self sustainable.

Table 5.2: Present Value of Pension Liability At Various rates of interest				
Rate of Interest	6.50%	7.00%	7.50%	8.00%
Present Value of Liability in (Rs. Crores)	429496	393999	362928	335628

An attempt was however made to examine if it is possible to stretch the fund to be created over a period of time, to make it a more feasible an option. Table 5.3 reveals the various alternative time period fund requirements ranging from ten year period to a twenty five year period. The pre funding that has to be made in order to meet the pension outgo, on account of central government employees recruited before 1-1-2004 in sustainable manner, ranges from Rs 31441 crore, to be made over a twenty five year period to Rs 50018 crore, to be made over a ten year period. The extent of pre funding required increases with lower rates of return

Table 5.3: Pre funding Requirement to service the liability under various Rates of Interest (Rs. Crores)				
Period	**Interest 6.50%**	**Interest 7.00%**	**Interest 7.50%**	**Interest 8.00%**
10 Years	**59745**	**56097**	**52874**	**50018**
15 Year	**45678**	**43259**	**41115**	**39211**
20 Years	**38980**	**37191**	**35600**	**34184**
25 Years	**35211**	**33809**	**32559**	**31441**

Given the current fiscal scenario, wherein, the central government is still experiencing revenue deficit, finding ways and means to mobilizing the required size of financial resources to make the required financial investments with the sole purpose of meeting the pension liability is quite a challenging task.

Partial Funding: An attempt was made to check the possibility of segregating the projected pension liability into a partially funded component and partially Pay As You Go component, for the employees still in service as on 2004. In order to do this, it was felt that age of the employees could be used as criteria to decide on what portion of the projected liability should be continued as PAYG and what portion of the liability should be funded by possible investments to be made for the purpose. The study has used two cut off ages 40 and 46, pension liability of all the employees who are below the ages of 40 and 46, could be brought under a kind of funded investment. Accordingly an attempt has been made to estimate the fund requirement that has to be planned to meet the liability of all the employees falling under the two cut off age limits. (Table 5.4)

	Employees aged 46 and below in 2004					Employees aged 40 and below in 2004				
ROI	Present Value of Liability	Annual fund requirement				Present Value of Liability	Annual fund requirement			
		10 years	15 Years	20 Years	25 Years		10 years	15 Years	20 Years	25 Years
.5	133985	18637	14250	12160	10984	74940	10425	7970	6801	6144
7.0	114782	16342	12602	10834	9850	62726	8931	6887	5921	5383
7.5	98631	14369	11173	9675	8848	52642	7669	5964	5164	4723
8.0	85002	12667	9931	8658	7963	44294	6601	5175	4511	4149

Table 5.4: Partial Funding of Pension Liability   (Rs in Crores)

The estimates reveal that at eight percent rate of return, the size of annual funding required to meet the liability arising on account of all the employees aged below 40 ranges between Rs 6601 crore over a ten year period to Rs 4149 crore over a twenty five year period. The size of funding increases with smaller rates of return and a higher cut off age.

While the above estimates indicate the kids of funding requirement to meet the future pension liability, switching to other modes of funding the same needs to be attempted in a very cautious manner as these could hamper the interests of the stake holders. Very often the eagerness to get out of a complex situation may lead to changes that may not augur well in the long run. Peter Orszag and Joseph Stiglitz, 1999 state "A key issue surrounding both public defined benefit systems and individual accounts is which elements are inherent to the system and which elements are merely common in how that system has been implemented in practice. That is to say, we observe that system Z is not working properly. Should we propose a switch to a system Y or instead work on improving system Z? Surely, comparing an idealized version of Y to an as implemented version of Z is not likely to prove insightful. A first step may therefore be to compare the inherent (idealized) features of Y and Z and then to examine whether political economy constraints differentially affect the two models (in terms of their idealized versus expected implementation features).Many of the myths arise from mixing comparisons between inherent and as implemented features…Statements about historic tendencies regarding implementation must be treated with much more caution than inherent features, especially since the historic tendencies in one nation are not necessarily reflective of those in another country." p6).

CHAPTER SIX
SUMMARY AND RECOMMENDATIONS

The rapid growth in the size of civil servant pension payments have become a subject of serious discussion all over the globe and there have been experiments to reform the pension practices that have been in existence for long. India too has got into heated debates on the issues relating to the pension reforms. It is in this context that a correct assessment of fiscal costs arising on account of civil servant pension payment and the costs likely to arise in future has become imperative in planning any remedial measures.

An upward trend in the civil servant related pension payments observed to be a common trend among majority of the countries however marked by significant variations among them. On an average OECD countries spend about 2 percent of GDP on civil servant pension payments; however, it ranges between less than 1 percent of GDP to almost 4 percent. Similarly although the average spending in the low and middle income countries is 1.2 percent, the ratio ranges between less than 0.5 percent to slightly more than 2 percent. An important aspect to be noted in this context is that while the old age related pension payments are related to the demographic status of a society, the civil servant pension is directly dependent on the employment policy of the respective governments in the corresponding past period. Hence, assuming that a country that experiences a high share of pension payments would reveal the same behavior forever would prove wrong until and unless the governmental recruitment patterns remained the same. Any comparisons across nations for any single point of time also tend to lead to misleading conclusions.

Hence, any temporal analysis pertaining to the civil servant pension payments has to take into consideration the public sector employment and the changes that have taken place in it over a period of time. Huge pension outgo at any particular point of time is not tantamount to a secular indefinite increase in pension payments unless and until it

is associated with the same kind of civil servant intake all along. The demographic characteristics of a nation largely impact on the old age related pension payments.

Indian government assumed a very expansive role in the aftermath of the independence and a couple of initial plan periods. In the process of providing for various goods and services that the government took on it self, there was a sharp increase in the employment base created for almost three decades after the independence under various five year plans. Employee intake as under the various five year plan period (from the Third plan onwards, the period for which annual employment data were available) reveals that there has been a considerable decline in the numbers recruited from one plan period to another.

The total pension expenditure in terms of its absolute size has had a considerable increase during the period of reference, from Rs 31.24 crore in 1964-65 to Rs 26205.06 crore in 2004-05 revealing an exponential growth of 18.45 percent

Pension expenditure as a percent of Gross Domestic Product was 0.13 percent in 1964-65 which has increased to 0.93 percent in 2004-05. It reached its peak in 1999-2000, of 1.1 percent of GDP after which there has been a decline. The overall trend and its increase are largely guided by the pension payments of the Defence sector

The pension liability analysis reveals that the total stock of pensioners was at its peak coinciding with the fifth pay commission period and would continue to be above 20 lakh level until 2016-17 after reaching its peak level in 2005-06. Hence, the huge increase to the total pension bill was merely not on account of pay revision but was coupled with increased numbers causing a significant increase in the total pension bill. Analysis pertaining to growth in government employment revealed that the huge intake which happened in the early decades after independence did not reveal the same behavior in the decades of eighties and nineties

The analysis revealed that pension liability on account of the employees under the old pension scheme would continue for a long period i.e. until 2065-66, in addition, the pension bill would increase substantially until the time period 2036-37, however, subsequently; the total pension bill would decline. The projections made for the civil servant category assuming a six percent inflation and pay revision assumed to be at three percent increase with every pay commission as percent of projected GDP revealed that the liability would continue to increase and reach 0.54 percent level by 2019-20 and remain at that level till 2024-25 after which they decline as a percent of GDP.

The actuarial estimates prepared in finding alternative ways of meeting the pension liability in a sustainable manner to the existing Pay As You Go system, reveal that any self sustainable funding of the future pension liabilities (only the civilian departments, i.e. all central government departments other than defence) would be of the order of Rs 3, 35,628 crore at an assumed 8 percent rate of return. The funding requirement would be higher at lower rates of interest. As an alternative to such huge one time investment, smaller investments to be made over a longer period too prove to be sizeable which range from Rs 50018 crore annual investments for a ten year period to Rs 31441 crore investments over a 25 year period.

Alternatively, an attempt was made to check the feasibility of partially funding the future liability taking age of the employees as the cut off to guide the partial funding decisions. The results reveal that in order to meet the liability on account of all the employees below the cut off age of 46 as on 1-1-2004 through funding, while meeting the rest by PAYG system, the required funding requirement ranges between Rs 12667 crore for a ten year period to Rs 7963 crore over a twenty five year period. With 40 as the cut off age the funding requirement ranges between Rs 6601 crore for a ten year period to Rs 4149 for a twenty five year period.

While the partial funding especially with the 40 age group appears to be a feasible solution, caution has to be exerted in adopting these changes. This is in view of the fact that first, the partial funding solutions relate only to a section of the civilian departments

and if the defence sector too is included financial implications would approximately double. Secondly, the existing systems of pension are increasingly becoming complicated after the introduction of the New Pension Scheme where in old pension scheme is applied to some section of the employees from the civilian departments while the defence sector continues to be under the old scheme. In the event more changes are brought in with in the group currently under the old pension scheme there is every possibility of complicating the pension administration. There are also issues concerning the data availability and the manner in which it is maintained which get amply described in the Working Group and the Expert Committees reports of Government of India. Given these considerations, caution has to be exerted in initiating any further reforms.

Mainly given the fact that the future liability although may be large in terms of the absolute size is not likely to last very long and does not constitute an alarmingly big share of the GDP which is also on the decline, it appears that pursuing the existing Pay As You Go to meet the liability would be an ideal solution.

Annexure

REPORT OF THE ACTUARY ON THE FUTURE PROJECTION OF CIVIL SERVICE PENSION AND SOME CONSIDERATIONS ON THE CONTRIBUTIONS REQUIRED TO FUND THE SCHEME

By

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1.   **Introduction:** Following the appointment of the Sixth Pay Commission (SPC) by Government of India, the Institute of Social and Economic Research (ISEC) in Bangalore was asked to look into the pensionary benefits now in force and come out with a report on its financial implications to the government. I was asked by ISEC to render assistance in their work and more particularly look into the followings aspects of the pensionary benefits:

(a)   What would be the likely projected liability if the now existing Pay-as-You-Go (PAYG) scheme of pension is to continue for the employees and pensioners existing as on 1-1-2004?

(b)   In case the liability as in (a) above is to be met by funding for the liability, what would be the level annual contribution required from government for the same, on different scenarios?

(c)   If the Pension liability for defence services is to continue for a few years more what would be the behaviour of the projected liability?

(d)   If such defence services pension is to be funded what would be the size of the contribution required from government to meet such liability?

I was asked by ISEC to attend to terms (a) and (b) above and take up the terms (c) and (d) later on.

This report is a sequel of my studies concerning terms (a) and (b) above and is intended to supplement the exercise being worked out by ISEC as required by the (SPC).

2. **Database:** To facilitate my studies ISEC provided me with the following data, viz.

(a) Year wise stock of civil service employees in service beginning from 1961 to 2004;

(b) Annual Pensionary Expenditure since 1976-77 to 2004-05 with break up for civil and defence services;

(c) Annual Expenditure of government towards pay and allowances from 1990-91 to 2003-04.

ISEC also supplied me with certain other supplementary information so as to either facilitate or cross check my work. Furthermore, ISEC was helpful by providing me with critical comments on my approach to the study that was reported by me to them from time to time. Also I was benefited from close interaction with the officials not only of the ISEC nut also of SPC and Union government in meetings held at the Committee Room of ISEC at Bangalore.

3. **Methodology:** The (PAYG) pension scheme applicable to employees and pensioners existing as on 1-1-2004, a defined benefit scheme which is met by annual government revenue and with no funding. The benefit side is defined by the Pension Rules framed by government as amended from time to time. For the purpose of this study the salient features to be considered on the benefit side are as follows:

(a) Pension consists of two parts: A Basic Pension defined as 50% of the average Basic Pay drawn by an employee over the 10 months just prior to his exit from service. In case the total pensionable service falls below 33 years the basic pension will be scaled down pro rata by the actual number

of pensionable service divided by 33. The second component is the Dearness Relief (DR) which is a compensation for any erosion of purchasing power of the rupee within the country on account of factors like price rise on consumer goods/services. This is worked out at present on the basis of an index on Cost of Living published by government department. Such Pension will continue to be paid to the employee after his exit on superannuation or voluntary exit according to rules. Pensioners of this type will hereafter be referred to as Employee Pensioners.

(b)   The Pension Rules envisage payment of family pension to the dependants of the employee or employee pensioner on his death. The family pension payable on account of death of an employee is based on the pay drawn by the employee at the time of death. In case of family pension emerging from the death of an employee pensioner such family pension is 50% of the employee pension. Family pensioner is also entitled to draw DR based on the family pension applicable to him. Pensioners of this type are hereafter referred to as family pensioners.

We have now to determine the number of pensioners existing as on 1-1-2004. Under this we have to determine how many are family pensioners and how many are employee pensioners. From out of the stock of employee pensioners as on 1-1-2004 how many will survive and draw pension in each of the following years have to be estimated until the last such pensioner dies. Similarly, from out of the employees in service as on 1-1-2004, we have to estimate how many of them will end up as pensioners in each of the following years. Once they become employee pensioner in a future year, how many will survive in the following years will have to be estimated until the last such pensioner dies. In this way from out of the stock of existing employee pensioners and also employees in service as on 1-1-2004, the total number that will remain as employee pensioner in each year following will be determined.

In a like manner, the existing stock of family pensioners will also be determined as on 1-1-2004. To this will be added the emerging family pensioners from out of the death of

serving employees and employee pensioners will be added. By tracing their survival in the years following, the number of family pensioners that are expected in each of the year since 2004 will be determined.

Thus we have a projection of employee pensioners and family pensioners that would be existing in each year since 2004.

The technique applied to estimate these numbers will now be explained briefly. We have data on the number of employees in service in each year since 1961 up to 2004. Take any year. The number of employees in service in that year is the result of number existing in the previous year less the number who die out, less the number that exit service voluntarily, less the number that retire on superannuation plus the new recruitment in that year. To estimate the deaths we have to settle for a suitable crude rate of mortality. This was estimated using the LIC(94-96) Ultimate Mortality Table, a table approved by the IRDA and used by insurers in India. From ISEC studies I was given the information about the average rate of exit of employees due to superannuation. By applying a modified version of the LIC(94-96) Ult Table we can estimate the rate of voluntary exit. Using these rates the number of deaths, the number of voluntary exits, the number who leaves service on superannuation can be estimated for the year. Since we know the beginning and end population of employees for the year concerned, the number of new recruits in the given year can be determined. This has been done for each year since 1961 up to 2004.

The superannuating employees in every year since 1961 will exist as pensioners and their number surviving to year 2004 was calculated using a survival table based on LIC(94-96) Ult Mortality table. In this way the
total number of surviving pensioners since 1961 could be determined. Since the years separating 2004 and 1961 is 43 years, taking the lowest possible superannuation age as 56 the oldest such surviving pensioner
could be 99 years in 2004. So practically such a calculation estimates the entire stock of employee pensioners as on 1-1-2004 from those who exit on superannuation. Similarly

assuming an average age at exit in the case of voluntary exits, the employee pensioners emerging from voluntary exits and surviving in 2004 was also estimated using the same survival table. In this way the stock of employee pensioners existing in 2004 could be determined.

Family pensioners emerge as a result of death during active service of the employee or death of employee pensioner. Since the number of deaths will be quite small relative to the total population, family pensioners emerging from employees in service will be quite small. Again deaths at very early ages are very unlikely to produce a family pensioner, as the employee's chance of being married at early age is small as also the chance of his death. Furthermore, since remarriage is not improbable at such ages to the spouse, their continuance as a family pensioner is curtailed by such eventuality. Family pensioners arise therefore predominantly from the death of employee pensioners. Since we have developed the number of employee pensioners emerging at every year since 1961, from such number it is possible to estimate the number of deaths occurring between 1961 and 2004. Thus the number of family pensioners emerging from employee pensioners and surviving in 2004 can be determined using the same mortality table taking the spouse's age as 5 years younger on the average.

The proportion of the family pensioners to employee pensioners is seen to be 44%. Projection of surviving employee pensioners in future years could be done using the assumed mortality table, but the same is not possible as we have no clear idea as to their age composition. So it was assumed that by and large the same proportion would be maintained in future years also and thus the size of the family pensioners in future years was taken as 44% of the estimated employee pensioners for that year. It is presumed that any slight overstatement of their number will be some what neutralized by the fact that their pension load relative to employee pensioner is 40% less on the average.

The Work Sheets involving the above calculations in digital form are saved in the enclosed Compact Disc (CD). The Work Sheets are in Excel Format and are readable from the CD.

The estimated number of employee and family pensioners thus settled, it is now necessary to estimate the pensionary outgo in respect of these pensioners every year in future.

First we proceed to determine the average pension in respect of an employee pensioner in the year 2004. The actual pension expenditure in the 2004 is taken as Rs.14,284.117 Crores. The total number of employee pensioners (E) in 2004 is 17,13,394 and the total number of family pensioners (F) in 2004 is 7,53,693. Thus the total number of pensioners (T) in 2004 is estimated to be 24,67,287. Let (AEP) represent the Average Employee Pension and (AFP) represent the average Family pension in 2004. If we assume that (AFP) is 60% of (AEP), then we have

$$(AEP) \times (E) + (60/100) \times (AEP) \times (F) = 14,284,11,70,000$$

From this relation we have

$$(AEP) = \quad \text{Rs. 65,955 per annum and}$$
$$(AFP) = \quad \text{Rs. 39,573 per annum.}$$

Pension will get escalated on account of DR every year. We have assumed that a compound escalation rate of 4.5% p.a. would be appropriate. This was arrived at by considering the aggregate pensionary expenditure
over the last few years for which data are available. The assumed escalation factor includes some loading for unexpected variations in future and can be regarded as safe enough. This also relates reasonably to the
inflation rate which is hovering about 4% per annum and the addition 0.5% is thought adequate contingency loading.

Pay and pensions get revised customarily once in ten years. I was informed that the ISEC studies show that an assumption of 3% increase in aggregate wage bill would be about

right and so over and above the addition to pension at the rate of 4.5% per annum, I have assumed an additional hike of 3% every 10 years starting from year 2008.

4. **Results of the Calculations:** The projection of the pensionary benefits is shown in the Annexure to this report. The annexure is named "Pension-4.5 ®" and is in excel format. In the worksheet named "abstract" in that file the Number of Pensioners (Employee, Family and Total), Average Pension (Employee, Family) and Pension Payout (Employee, Family and Total in Rs. Crores) are calculated and listed on the above referred bases and methodology. Select values of aggregate pension pay out estimated are listed below:

Table showing estimated pensionary outgo

Year	Employee Pension payout (in Rs. Crores)	Family Pension pay out (in Rs. Crores)	Total pension payout (in Rs. Crores)
2004	11300.69	2983.38	14284.07
2008	13532.84	3572.68	17105.52
2013	16549.07	4368.94	20918.02
2018	21862.54	5771.79	27634.33
2023	27723.68	7319.11	35042.80
2028	34076.27	8996.13	43072.41
2033	39321.68	10381.01	49702.69
2038	45164.50	11923.41	57087.90
2043	41747.23	11021.30	52768.53
2048	35011.92	9243.18	44255.10
2053	25405.44	6707.07	32112.51
2058	16303.15	4304.07	20607.22
2063	8179.51	2159.39	10338.90
2068	3159.88	834.19	3994.07
2073	800.68	211.34	1012.02
2078	110.26	29.17	139.43
2083	3.52	0.97	4.49
2088	0.00	0.00	0.00

5. **Funding Requirement for the above pension payout**: Currently the compound yield that can be earned on government securities of a long term nature hovers around 7.00%. If an absolutely safe funding philosophy is to be envisaged then the level annual

contribution required to service the above pension pay out can be estimated in the following manner. First, we determine the present value of the total liability outgo at a compound rate of interest of 6.50%. The Present Value of the liability as on 1-1-2004 amounts to

Rs.4,29,496 Crores. If this is funded over 10 years by level contributions, then the annual contribution required from government amounts to Rs.59,745 Crores. If instead the funding period spreads over 15 years, the contribution required will be Rs.45,678 Crores and for a spread of 20 years it would be Rs.38,980 Crores and for a spread of 25 years it would be Rs. 35,211 Crores per annum.

I have calculated the funding requirements under different scenarios and these are tabulated below:

Annual Contribution required for servicing the pension under different scenarios
Table Showing Present Value of Pension Liability
at Various rates of interest

Rate of Interest	6.50%	7.00%	7.50%	8.00%
Present Value of Liability in Rs. Crores	429496	393999	362928	335628

Table showing annual level contribution required
to service the liability under various scenarios
(all figures in Rs. Crores)

Particulars	Interest 6.50%	Interest 7.00%	Interest 7.50%	Interest 8.00%
Contribution period 10 Years	59745	56097	52874	50018
Contribution Period 15 Year	45678	43259	41115	39211
Contribution Period 20 Years	38980	37191	35600	34184
Contribution Period 25 Years	35211	33809	32559	31441

6. **End Note:** The actuarial bases used for the foregoing calculations are:

(a)   LIC(94-96) Ultimate Mortality Table: These mortality rates are derived from the policyholders in the books of Life Insurance Corporation of India during the period 1994 to 1996. The rates have been determined on a scientific basis and hence commands the support of IRDA. The employees and pensioners of the Central Government civil service can be reasonably assumed to reflect the insured lives with LIC. Both are subject to some kind of Medical check at the time of entry. Substantially the composition of the population in both cases can be assumed to be similar. There is another table available namely LIC(94-96). This is more applicable to insured annuitants and would be significantly lighter. Since in this case we are studying the existing stock of persons (civil service employees and personnel) without any new additions, the ground for introducing a factor for improvement in mortality is less forceful. Already the LIC table is select as the insurer will be making enough checks to weed out lives showing extra mortality and the table is based on standard lives of the insurer only. If it is thought a lightening of the mortality is desirable, my argument is that since deaths of employees and employee pensioners produce a burden in the shape of family pensioners, any little short coming in not assuming a lighter table is adequately compensated by this liability addition. Use of a lighter table would understate the emergence of family pensioner. The application of a fairly recent mortality table viz LIC(94-96) Ult is therefore considered to be suitable for this exercise.

(b)   Salary Escalation Rate: The pensionary expenditure over the past years shows no definite trend. This is due to the fact that the population does not remain stationary and also the pensionary benefits gets revised time and again. Furthermore the expenditure includes payout in the shape of commutation values which distorts the smooth emergence of the expenditure pattern. So it would not be wise to rely on the rate of expenditure growth to project the future pension escalation. Escalation is mainly due to neutralization for increase in price rise as reflected by the Cost of Living Index. This can be taken as another way of looking

at inflation which at present is hovering around 4 %. Rate of inflation works on basic pension only. However compulsion of prudence forces me to apply it on the aggregate pension and at a rate of 4.50% per annum. Such an assumption automatically allows at least to some extent for expansion in pensionary expenditure from future improvement in mortality and any unforeseeable escalation beyond the control of the economy.

 (c) Rate of Interest: I have shown how the pension expenditure behaves at different rates of interest. I have also worked out the annual level contribution required under various scenarios so that the policy makers can take a considered view in the matter. In the circumstances since this does not involve any fixing of liability for an accounting purpose, I have dealt with the question of appropriate choice of rate of interest in this way.

(d)   Expenses of management: I have not made any express provision for expenses of managing the fund as well as administering the benefits. This will be a minor fraction of less than 5% of the pensionary expenditure, which can continue as Pay as You Incur basis from revenue.

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