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SUDAN

Report to the Government

Reform of the Sudanese Public and Private Pension System (2003): Policy, financial, actuarial and administration considerations

International Financial and Actuarial Service
Social Security Department
International Labour Organization, Geneva

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Introduction

Following a series of discussions held with the Government of Sudan, a team of officials from the ILO undertook a mission to Khartoum in July 2000 to ascertain the extent to which support could be given for improvement of social security in Sudan. Particular attention was given to a possible unification of the two main social security pension schemes in the country, the National Social Insurance Fund (NSIF) and the Public Service Pension Fund (PSPF). The mission team found that that there was, in general, broad support for unification of the two pension systems and the authorities had indicated that the Government would solicit ILO guidance as the most appropriate ways for the unification to be achieved.

Accordingly, a technical assistance project (UNDP/SUD/01/0069)[1] was formulated at the request of the Government under which the ILO would with the assistance of international and national consultants and counterparts examine the issues relating to the proposed unification of the two Funds. Under the terms of the project, the ILO was requested to study the existing schemes and make recommendations as to the most appropriate strategies for unification. The project was financed with resources provided by the UNDP, the Government of Sudan and the ILO Office in Cairo

Consequently, the ILO assigned Mr. Renison Kahakachchi, Social Security Actuary from Sri Lanka, and Mr. Mike Whitelaw, Expert in Social Security Administration from Australia, in order to study the financial, administration and other aspects of the existing schemes, identify the issues relevant to the proposed unification and make the necessary recommendations regarding the following three aspects of the proposed unification:

- conceptual basis of the schemes and the related legislation;
- institutional and administrative arrangements;
- financial systems.

The terms of reference for the Actuary included the following tasks:

- in collaboration with local counterparts, to collect and analyse the data required for the actuarial valuations of the NSIF and the PSPF;
- complete actuarial valuations of both schemes taking into account structure and coverage for each, including:
    - pension formula (accrual rates, salary base),
    - retirement eligibility criteria (years of service, pension age),
    - commutation of pensions (rate of commutation, age),
    - *Decree 574*;
- make projections of expected future financial developments of the schemes under:

[1] United Nations Development Programme. Sudan: Improvement of social governance through the unification of the two social security schemes (SUD/01/006).

    - status quo conditions,
    - unification of legislation (based on the more generous benefits provided by PSPF),
    - impact of the unification of both legislations on financial reserves.
- make recommendations on alternative financing methods and appropriate contribution rates to ensure the long-term financial viability;
- advise on investment policy.

The terms of reference of the Expert on Social Security Administration included the following tasks:

- review the administrative structure of both the NSIF and the PSPF;
- review the role of government with respect to the two schemes;
- advise on and recommend possibilities for a unified system of administration with regard to:
    - registration of insured persons,
    - contribution collection,
    - payment of pensions,
    - recording of pensions;
- make recommendations with regard to the unified administration of the two pension funds, including the identification of obstacles to unification and the consideration of possible solutions.

During the Actuary's initial assignment to Khartoum from 2 to 23 October 2002 statistical and other data and information required for the valuations was collected from NSIF. Discussions were held with senior NSIF and PSPF officers on issues concerning the valuations and on exploring considerations that would be relevant to possible unification. At the time PSPF was unable to provide required data due to time constraints.

The period from 25 October to 8 November 2002 was spent in Geneva cleaning and editing the data collected and initiating actuarial projections relating to NSIF. In addition discussions took place with ILO Headquarters' social security planners to determine the outline for a possible harmonization of the two schemes.

The period from 9 to 20 November 2002 was spent in Colombo, Sri Lanka, analysing the results of the initial projections sent from Geneva and preparing a preliminary Technical Note on the financial status of the NSIF.

This preliminary Note on the financial status of the NSIF was submitted to the NSIF during the Actuary's second visit to Khartoum from 14 May to 15 June 2003. During this period, the Actuary was informed that data given by the NSIF to conduct the actuarial study had been found to be incorrect; hence, fresh data were sought from and provided by NSIF for another valuation.

The data relating to the PSPF were also received during this mission. Additionally, the Actuary understood that the primary issues for the Government as regards the objectives of the project were financial ones, specifically:

- the quantum (present value) of the liabilities that must be met by the Government (in addition to the normal employer's share of contributions) and

- whether the current contribution rate was sufficient to meet the assumed liabilities of the PSPF.

Hence, the actuarial valuation of the PSPF was undertaken primarily to address these considerations.

During the visit the Actuary presented to NSIF and PSPF senior officials the salient features of a possible unified, or common, scheme based on a harmonized benefit structure, which was considered by the ILO to be appropriate for unification. NSIF and PSPF senior officials agreed in principle that the proposed scheme was suitable.

A second Technical Note on the financial status of the NSIF was prepared. It was based on the results of an actuarial valuation of the required corrected data. This Note is also a summary of main findings of the actuarial valuation of the PSPF and a summary of main findings of the actuarial valuation of the proposed common scheme. It was submitted and explained to relevant NSIF and the PSPF authorities during the Actuary's third mission to Khartoum from 7 to 21 September 2003.

The Expert in Social Security Administration also took part in the mission from 7-9 September to 6 October 2003, during which the he held a series of discussions with NSIF and PSPF senior officers about the existing administrative arrangements of the two organizations.

This report contains the findings related to the financial status of the NSIF and the PSPF, and to the ILO recommendations regarding the proposed unification based on the findings of the two experts.

Acknowledgements

Ms. Anna Hagemejer, Actuarial Assistant, carried out all the actuarial projections in Geneva by making use of the model, with certain modifications, developed by the International Financial and Actuarial Service of the ILO (ILO FACTS). Ms. Hagemejer made numerous projections in connection with the valuation of the NSIF (two valuations had to be conducted, as the first set of data provided by NSIF was incorrect), the PSPF and the proposed common scheme. Her task became more onerous as the data samples given by the NSIF and the PSPF were found to have many deficiencies and required adjustment and smoothing out before projections could be made.

Ms. Anne Drouin, Mr. Rudiger Knop, Mr. Clive Bailey and Ms. Ursula Kulke of the ILO Head Office in Geneva reviewed and edited the Technical Notes prepared by the Actuary and the report of the Social Security Administration Expert.

Mr. Mohammed Ali Garih of the NSIF, Mr. Mohammed Mahamud Awad of the PSPF and Mr. Isam Ahmed were the national counterparts of the consultants and Mr. Noman Hassan Ahmed was the Interpreter/Translator for them. Messrs. Garih and Awad were responsible for the collection of the data samples, which were given for conducting the actuarial study. The actuarial assumptions adopted in the valuations were determined after having discussions with Messrs Garih and Awad and other officers including Mr. Mohamed Ali, the Assistant General Manager for Finance, and Dr. Khalid Yassin, Assistant General Manager for Insurance Affairs of the NSIF.

The Director General of the ILO appreciates the assistance and cooperation extended to the two consultants by the General Managers, Assistant General Managers and other senior officials of the NSIF and the PSPF. In particular, special thanks are due to Mr. Mohammed Ali Garih, Manager for Planning and Technical Affairs, and Mr. Abdel Wahab Ahmed, Manager, Computer Department of the NSIF, to Mr. Mohammed Mahamud Awad, Deputy General Manager of the PSPF, and to Mr. Noman Hassan Ahmed, Translator/Interpreter, who assisted the consultants in numerous ways. Appreciation is also extended to those senior officials in the public- and private-sector organisations and to the representatives of the Employers’ Union and the trade unions who participated in many discussions with the consultants.

Abbreviations and acronyms

EIB	Employment injuries benefits
ERA	Early retirement age
ERP	Early retirement pension
GAP	General average premium
GCR	Gross contribution rate
GDP	Gross domestic product
IE	Insurable earnings
ILO	International Labour Office
ILO-FACTS	International Labour Office, Financial, Actuarial and Statistical Services
IMF	International Monetary Fund
IT	Information technology
LTBB	Long-term benefits branch
MP	Minimum pension
NRA	Normal retirement age
NSIF	National Social Insurance Fund
PAYG	Pay-as-you-go system of financing
PB	Pension benefits
PSB	Pension scheme benefits
PSPF	Public Service Pension Fund
SD	Sudanese dinars
SIC	Special invalidity credits
SP	Scaled premium
US$	US dollars

Executive summary

The present situation

At present the National Social Insurance Fund (NSIF) and the Public Service Pension Fund (PSPF) are engaged in providing social security protection to employees in the formal sector of Sudan. Both schemes provide long-term benefits (old-age, invalidity and survivors' benefits) commonly known as pension scheme benefits (PSB) and employment-injury benefits (EIB). A health insurance fund is also in existence to provide health insurance benefits to the public servants.

The membership of the PSPF is available to certain categories of public servants and to employees in government-owned organizations only.

Private-sector employers with at least three employees are obliged to register themselves and their employees with the PSPF. The scheme also covers public-sector workers in grades 15, 16 and 17 and, in accordance with the provisions *of Decree 574 of 1978*, those public servants who are members of the NSIF, should on reaching grade 14 register and participate with the PSPF.

The contribution rate (now 25 per cent of insurable earnings (IE)) is the same under both schemes but the PSPF benefit package is more favourable. One of the objectives of the unification of the two schemes is to eliminate this anomalous situation.

At present the NSIF has about 330,000 active members and about 73,000 beneficiaries drawing pensions. The PSPF has about 350,000 active members and about 120,000 beneficiaries drawing pensions.

The *Social Insurance Act of 1974* and the *Public Service Pensions Act of 1992* provided the legislative basis for the establishment of the NSIF in 1974 and the PSPF in 1994, respectively. According to the respective *Acts*, all contributions and other payments due under the *Acts* are to be paid in to these two Funds, and all the claims for benefits and expenditure relating to the schemes are to be met from them but no provision as regards the financial organization of the schemes is contained in the statute. Hence, so far, all the resources payable under each scheme have been pooled and there has been no separation of the reserve funds into a pensions branch and an employment injury benefit branch (EIBB) for each scheme. Furthermore, financial autonomy has not been established for each benefit branch.

The NSIF

The ILO had previously recommended a partial-funding financial system (scaled-premium system, as described in Annex E) for financing the NSIF. However, for the NSIF actuarial valuation of 30 June 1994, the Actuary had adopted a full-funding basis for financing the scheme (see Annex E) when estimating the required contribution rate. He had thereafter recommended a contribution rate of 23 per cent of IE for financing of the Pension Scheme and 2 per cent of IE for financing of the EIB Scheme. Consequently, the NSIF has been collecting from insured members and their employers 25 per cent of the monthly IE as the joint-monthly contribution to the scheme.

Benefits are paid according to the provisions laid down in the *NSIF Act*, but there is no regular revaluation of pensions other than for the minimum pension. Consequently, almost all pensions-in-payment have converged to the current level of the minimum pension, which is low when compared with the average gross-monthly earnings of an insured member.

NSIF experiences a very high level of administration expenses and low investment returns. It is understood that the public has a very poor perception of the NSIF because of the low level of benefits, high administration expenses and low investment returns.

The PSPF

Until 1994, the PSPF had been financed under an unfunded, pay-as-you-go (PAYG) system of financing (see Annex E), but in 1994 a funded system of financing was introduced. A valuation of the PSPF was conducted as at 1 July1994, just before the *PSPF Act* was introduced, in order to estimate the quantum of the liability accrued in respect of :

- pensioners and survivors as at 1 July 1994, and
- active members as at 1 July 1994 and their prospective survivors, corresponding to each member's period of service up to 1 July 1994. The Government had agreed to meet these liabilities and decided that the PSPF should meet the liabilities corresponding to the period of service of a member after 1 July 1994.

It would appear that the Actuary estimated on a full funding basis the contribution rate required to finance the liabilities vested in the PSPF and recommended a joint contribution rate of 25 per cent of IE for this purpose. Since then the Government has been paying special contributions to meet liabilities corresponding to pre-1 July 1994 service, which had been accepted by the Government and also 17 per cent of IE of the active members of the PSPF as the normal employer's share of the joint contribution.

The Government arbitrarily fixes rates by which all pensions-in-payment are revalued, and the PSPF revalues pensions-in-payment only when it is directed by the Government to do so.

Also under the PSPF, administration expenses are relatively high and investment returns are low. The public perception of the scheme is low as the pension payments are delayed and contributions due from federal states are often in arrears.

Similarities and differences

The rate of contribution under both the NSIF and the PSPF is the same: 25 per cent of IE. However, the type and the scales of benefits provided are different.

Both schemes provide old-age, invalidity and survivors' benefits (PSB) and EIB.

- The PSPF provides certain additional benefits such as end-of-service gratuities.
- The qualifying conditions for certain benefits, normal retirement ages, early-retirement ages, rates of benefits, and so on, of the two schemes are different.

Early retirement as low as 30 years is permitted in the PSPF under certain special conditions such as ministerial terminations and abolition of posts. NSIF also permits early retirement after the age of 45 years but with a reduced pension; the reductions imposed are, however, insufficient in actuarial terms.

Both schemes permit members to commute one-third of the pension on very generous terms, but the commuted portion is restored at the end of a specified period or on the earlier death of the pensioner.

At the PSPF all pensions-in-payment are revised when the Government decides to revalue the pensions, but at the NSIF only the minimum pension is revalued and the rates of revaluation are also different.

The main similarities and differences of the two schemes are shown in Annexes C and C1.

Problems and anomalies

The two schemes require the same contribution rate, but the levels of benefits are different.

The benefit levels of both the NSIF and the PSPF are very low even though the pension formulae produce pensions with replacement ratios of 75 per cent for the NSIF and 83 per cent for the PSPF, on completion of 37.5 years of contributions. The pensions do not reflect the former earnings of members, because pensionable salary is a low percentage of the gross salary of an average-insured person.

Under *Decree 574 of 1978*, those public servants who contribute to the NSIF can on reaching grade 14 join the PSPF and, if they choose to do so, the NSIF is required to pay a transfer value to the PSPF. The implementation of this provision has given rise to many problems, such as the amounts paid being considered too low by the PSPF, a delay in effecting transfer payments, and so on.

The rates and the timing of revaluation of the minimum pension of the NSIF and the minimum and other pensions of the PSPF are fixed by the Government and the revaluation rates have no relationship to the rate(s) of growth of the average IE of the Fund(s) and/or to the average rate(s) of return on the Fund(s). Consequently, the two Funds have experienced severe financial strains.

The contributions to, and the pensionable salaries of, the two schemes are based on basic salaries and a few other allowances of the members whereas the allowances that are not taken in to account form a very high percentage of the gross earnings of an insured member. Consequently, the average IE of the Fund(s) are comparatively low and the minimum pension payable at present is therefore high when compared with the average IE of members, especially those of public servants who contribute to the NSIF. Furthermore, contribution income is low even though the rate of contribution is relatively high.

The PSPF permit, under certain circumstances, the payment of retirement pensions from an early age (30 years) without any reduction provided that at least 144 months contributions have been made. In the NSIF, early retirement with a reduction of the pension amount is allowed after the age of 45 years provided at least 144 months of contributions have been made, but the reduction factors adopted are inadequate. Consequently, a significant financial burden has been imposed on the respective Funds.

Administration expenses are very high in the NSIF, at about 38 per cent of contribution income, representing about 36 per cent of total income in year 2000, whereas the *NSIF Act* stipulates they should not exceed 10 per cent of total income. Even in the PSPF administrative expenses are relatively high at about 13 per cent of contribution income or 9 per cent of total income in year 2002. The big difference in the level of administration expenses is attributed to the different nature of the two schemes – the NSIF collects contributions from private-sector employers located throughout the country whereas the PSPF works only with public-sector offices. In spite of large-scale computerization taking place at the two institutions, administrative expenses are still very high.

The average rate of return on the reserves of the two schemes is too low, at less than the average rate of inflation and the average rate of increase of IE. It is evident that both Funds are utilized for financing trading activities, normally of a high risk and a volatile nature.

Also a large proportion of the funds is tied up in property/property development. The present cumulative effect of these investment activities is that the return earned on the Funds is very low.

The records maintained by the two institutions are incomplete and are not up to date. At the NSIF individual member records have not been up dated since 31 December 1998. The two institutions were able to give only sample data (which were also incomplete in some respects) to conduct the actuarial studies. These data were smoothed out and certain assumptions had to be made to determine the respective data bases used in the valuations.

Present financial status of each scheme

Based on the results of the financial projections made for 50 years and utilizing the sample data supplied by each institution and according to the assumptions described in sections 2 and 3, the contributions required to finance the Long-term benefit branch (LTBB) of each scheme were estimated under two financial systems, namely the general-average premium (GAP) system and the scaled-premium (SP) system.

- The GAP system is a form of full funding over a defined period where a constant contribution rate is determined and is required to keep the system financially viable over the projection period.

- The SP system is a form of partial funding, where the contribution rate is so fixed that the reserve is not diminished during the period considered (called the period of equilibrium).

The contributions required to finance EIB have been estimated on the basis of the past experience of the NSIF as detailed information about past claims were not readily available. However, the system of financing –the System of Assessment of Constituent Capitals – is being recommended for financing this branch of benefits. This system of financing is described in detail in Annex E.

The financial status of each scheme, revealed by actuarial studies, is briefly described below.

NSIF

Under status quo provisions, with only the minimum pension being re-valued annually, the present contribution rate of 25 per cent of IE is found to be inadequate to finance the LTBB of the Scheme for 50 years under the GAP system of financing.

The required net contribution rate (under GAP) to finance the scheme for 50 years has been estimated to be 26.25 per cent of IE. This implies that the required gross contribution rate (GCR) inclusive of a provision of 3 per cent of IE (which is the recommended level for future administrative expenses) would be 29.25 per cent of IE. The estimated contribution rate required for financing the EIB is 0.75 per cent of IE. Hence, the required total GCR is 30 per cent of IE.

Under the scaled premium (or partial-funding) system of financing (SP system), the net contribution rate required to finance the LTBB of the scheme for 20 years (that is, for a period of equilibrium of 20 years) is 20.18 per cent and the required GCR is 23.18 per cent. With the 0.75 per cent of IE required to finance the EIB, the required GCR is 23.93 per cent of IE, which of course is less than the present contribution rate of 25 per cent.

Hence, it would be possible to finance the scheme for 20 years under the SP system, but depending on the actual future experience of the scheme with regard to rates of return on the Fund, rates of escalation of IE and the level of administration expenses, it may become necessary to raise the contribution rate before or at the expiry of the 20 year period.

It appears that the contribution rate required to finance benefits provided by the NSIF is high due to the presence of public-sector workers in the NSIF.

PSPF

The present contribution rate of 25 per cent of IE is not adequate to meet the liabilities vesting on the PSPF over a period of 50 years under the GAP system of financing.

The required net contribution (GAP) rate to finance the LTBB over a period of 50 years is 28.08 per cent of IE. With an assumed level of expenditure of 2 per cent of IE (which is the recommended level of expenses for this scheme), the required GCR would be 30.08 per cent of IE. The estimated contribution rate required to finance the EIB is 0.75 per cent of IE. Hence, the required total GCR is 30.83 per cent of IE.

Under the SP system of financing, the net contribution rate required to finance the liabilities over a period of equilibrium of 25 years is 17.77 per cent of IE and for a period of equilibrium of 20 years is 14.20 per cent of IE With the provision of 2 per cent of IE for administration expenses, the required GCRs are 19.77 per cent and 16.20 per cent of IE, respectively. With the contribution rate of 0.75 per cent required to finance the EIB, the required total GCRs would be 20.52 per cent and 16.95 per cent of IE, respectively. This is 4.48 per cent and 8.05 per cent less than the current contribution rate of 25 per cent.

The present value of the government's share of liabilities occurring during the next 50 years, corresponding to pre-1 July 1994 members' service, has been estimated to be 303,205 Mn. SD. The additional contribution required during the next 50 years to meet this liability is estimated to be 18.41 per cent of IE of active members of the PSPF.

Since, under the SP system of financing, the estimated required contribution rates are 20.52 per cent for a period of equilibrium of 25 years and 16.95 per cent for a period of 20 years, it is possible to reduce government liability from 18.41 per cent to (18.41-4.48) = 13.98 per cent of IE or even to (18.41-8.05) = 10.36 per cent of IE. If PSPF future experience with regard to investment returns, salary escalation and administration expenses turns out to be more favourable than the rates assumed in this study, it may become possible to further reduce government liability after the next actuarial valuation. On the other hand, if an adverse experience is recorded in future, a higher contribution rate may become necessary before the expiry of the 25 or the 20 years in order to meet government liabilities and those of the PSPF. The aforementioned results are presented in Table ES.1.

Table ES.1. Status quo results (where applicable, figures are as a percentage of insurable earnings (IE))

	NSIF (%)	PSPF (%)
Net GAP rate for 50 years	26.25	28.08
- Provision for administration expenses	3.00	2.00
Gross GAP rate for 50 years	29.25	30.08
Net SP rate for 20 years:	20.18	14.20
Gross SP rate for 20 years	23.18	16.20
Contribution rate to meet EIB	0.75	0.75
Required total contribution rate under:		
- GAP for 50 years	30.00	30.83
- SP for 20 years	23.93	16.95
Present value of government share of liabilities (Mn. SD)		303,205
Contribution required to meet government share of liabilities		18.41

Reasons for recommending harmonization

Providing uniformity in the level of pensions implies that the objective is to ensure that all insured persons receive equal/same benefits in return for the same rate of contribution. It is inequitable to pay different types/levels of benefits to NSIF and PSPF members where the same rate of contribution is applicable, in the absence of valid actuarial reasons to do so. The introduction of a common scheme will in the long run promote equity for all persons protected by the scheme by:

- Providing better and more reliable social protection – It is anticipated that unification of the two schemes will in the long run help to create a financially more stable scheme.
- Eliminating problems related to implementation of provisions under *Decree 574 of 1978* **– A**s mentioned earlier, the implementation of these provisions cause problems to both Funds, which will cease if the scales of benefits are independent of the grades of employees as is the case under the proposed common scheme.
- Facilitating mobility of labour from public to private sector and vice versa **– A** common scheme would ensure that the accrued benefits are preserved when employees move from the public to the private sector.
- Earning better investment returns from the funds **–** A combined fund managed under the supervision of a common investment board/committee would facilitate judicious investment decisions, perhaps less possible with a smaller fund.
- Facilitating introduction of a common operational system with improved administration and increased transparency.
- Effecting savings in administrative expenses while improving services rendered to insured members/beneficiaries.
- Achieving economies of scale in operational activities.
- Providing more equity and better social protection, and improved governance, to strengthen confidence in the pension scheme and enhance social stability.

Proposed common scheme and its impact

The proposed common scheme's objective is to provide old-age, invalidity and survivors' benefits and EIB. As the proposed scheme's benefits are closer to that of the PSPF, the consensus was, to the extent possible, to provide the better benefits of the PSPF to all categories of insured members.

The proposed rates of accrual of old-age benefits are more or less the same as the rates of accrual of old-age benefits under the present PSPF. However there are certain differences with regard to the following:

- minimum number of contributions required to qualify for an old-age pension, now 180 months as against 144 months in the PSPF.
- qualifying conditions, and the scale of benefits for invalidity.
- minimum early retirement age with a reduced pension, now 50 years as against 45 years in the NSIF and 25 years contributions in the PSPF.
- reduction in the pension for early retirees. The pension payable to early retirees would be reduced by factors derived according to actuarial principles.

Present PSPF special benefits will not be paid under the common scheme. It is recommended that the end-of-service benefits and other special benefits payable to the public-sector employees be paid from government revenue as separate occupational benefits and not from the common scheme.

The salient features of the proposed common scheme are given in Annex D.

The level, and the timing of the equalization, of the minimum pensions on the introduction of the common scheme may be determined by taking the cost factor into account (see section 5.7).

Following the introduction of the common scheme, it may be possible to extend social insurance protection to other sectors such as farmers' associations and self-employed persons.

1. Economic, demographic and social protection contexts

1.1. Socio-economic environment

Economic progress in Sudan has been significantly constrained due to the unsettled conditions prevailing in the south of the country. The situation has improved during the last five years with inflation falling from 130 per cent in 1996 to less than 8.5 per cent in 2002. In 1999 GDP grew by 5.2 per cent and GDP growth rate had reached 8.3 per cent in 2000. Recent oil discoveries are expected to boost GDP growth rate and lower the current account deficit to less than 1 per cent of GDP. It is anticipated that the rate of inflation will drop further to 7.0 per cent by end-2003 and to about 4 per cent by end-2006. The GDP per capita for the year 2001 has been estimated to be US$395.

The general economic improvement has been helped by reforms supported by the IMF. These reforms emphasize containing fiscal deficits and limiting monetary growth and inflation. The proposed key structural reforms include privatization of public-sector enterprises; this and other measures could have a positive impact on the membership of the two schemes.

1.2. Demographic situation

The last census of the population was carried out in 1993. Due to unsettled conditions in the south, almost all the more recent Government surveys relate to northern Sudan only. According to available publications, the total population of Sudan has been estimated to be around 30 million, out of which nearly seven million are said to be living in and around the capital city of Khartoum. The number of persons in the insurable age group of 15 to 59 years living in the north has been estimated to be about 13 million (6.242 million males and 6.539 million females) and the number employed out of this population is estimated to be 6.600 million. Furthermore, the number of persons employed in the non-public sector has been estimated to be around 4.957 million of which nearly 53 per cent are agricultural and fisheries workers.

1.3. Overview of the social protection system

1.3.1. Overall structure of social protection

At present, the following institutions are engaged in providing social security protection:

- Public Service Pension Fund (PSPF) — covers all employees in government service (civil servants, as well as employees in government-owned organizations) other than public servants in grades 15, 16 and 17. This scheme provides end-of-service gratuities and pensions on termination of service under certain conditions, in addition to the usual old-age, invalidity and survivors' benefits. Hence, it resembles an occupational pension scheme more than a social insurance scheme;

- National Social Insurance Fund (NSIF) — is supposed to cover all private-sector workers who work for an employer with five or more workers and employees in public service who are in grades 15, 16 and 17. Upon reaching grade 14, an employee in public service would become a member of the PSPF and receive benefits from the

NSIF, the latter being required to transfer to the PSPF the actuarial reserve relating to the employee *(Decree 574)*.

As mentioned, the scale of benefits provided under the two schemes is different (the PSPF provides better benefits) even though the rates of contributions made by the insured employee and the employer are the same.

As a first step the Government wishes to unify the two pension schemes. One board has been established and is responsible for the operation of the two schemes, following unification of the two Boards of Directors in 1996. The Board, which was initially tripartite, now seems to have more government nominees. The two Funds act independently; they maintain separate funds, record keeping and managements.

- The Health Insurance Fund is in operation to provide health insurance benefits to civil servants and their families.

- The Zakat Fund is a social assistance scheme, which is based on a religious system of wealth redistribution founded on the moral responsibility of the rich towards the poor. Every Muslim whose wealth exceeds a certain level is obliged to give every year a certain portion of it for the benefit of the poor. The *Zakat Act* was passed in 1984 and the Fund has been brought under the taxation department. An autonomous body has been established to manage all Zakat operations and it is supervised by a board of trustees appointed by the President.

1.3.2. The National Social Insurance Fund (NSIF)

The NSIF was established in 1975 following the enactment of the *National Social Insurance Act of 1974*. The *Social Insurance Act of 1990* came into force on 1 July 1990 and replaced the *Act of 1974*. The NSIF operates under a tripartite Board. Its administration is carried out by 35 offices throughout the country, which are responsible for the collection of contributions and payment of benefits.

1.3.2.1 Insurance coverage

At present the following categories of persons are eligible for registration.

- every person who is employed in the private sector in an organization with five or more workers,

- all those employees in the public service who are in grades 15, 16 and 17.

1.3.2.2 Benefits

The *Act* provides for payment of old-age, invalidity and survivors' benefits, as well as EIB.

The NSIF pays certain special benefits, which are known as social assistance to its members, and for which there is no explicit provision in the *Act*.

1.3.2.3 Contributions

The contributions are based on IE defined as basic wages or salaries plus a cost-of-living and any other allowances specified by the Minister (presently the nature-of-work allowance is included). Currently, there is no ceiling on IE and the applicable joint contribution rate is 25 per cent of it, of which 2 per cent is ear marked for payment of EIB. Out of a total contribution rate of 25 per cent, 8 per cent is paid by the employee and 17 per cent by the employer (15 per cent for pension benefits and 2 per cent for EIB). The above contribution rate was recommended to finance the scheme on a fully-funded basis after an actuarial study was conducted as at 30 June 1994.

1.3.2.4 Provision for administrative expenses

The *NSIF Act* stipulates that only up to 10 per cent of total income can be utilized for administrative expenses.

The salient features of both the NSIF pension and EIB schemes are given in Annex A.

As at 1 January 2003, NSIF was estimated to have 330,000 active members and 850,000 inactive members, both groups having acquired some rights. The number of beneficiaries was about 73,000.

The contribution income received during the year 2002 was 7.682 billion SD and the total benefits paid during the same year amounted to 5.227 billion SD including 314 million of social assistance.

A summary of a statistical analysis of the performance of the NSIF for the period 1998 to 2000 (the period for which audited accounts were available) is given in Table 1.1.

Table 1.1: NSIF – Statistical analysis of the performance during the period 1998 – 2000 (% billions)

		1998	1999	2000
1.	Contribution income	2.6	3.7	4.0
2.	Rate of growth of contribution income (% p.a.)	71.04	43.80	7.57
3.	Investment income	0.4	1.0	0.2
4.	Total income (contributions + investment income)	3.0	4.8	4.2
5.	Rate of growth of investment income (% p.a.)	73.38	157.36	(-77.70)
6.	Administrative expenditure	0.9	1.4	1.5
7.	Rate of growth of administrative expenditure (% p.a.)	42.40	45.34	11.89
8.	Benefit expenditure	0.8	2.5	2.2
9.	Rate of growth of benefit expenditure (% p.a.)	136.29	205.00	(11.05)
10.	Ratio of administrative expenditure to contribution income (%)	36.05	36.46	37.93
11.	Ratio of administrative expenditure to insurable earnings (%)	9.01	9.12	9.48
12.	Ratio of administrative expenditure to benefit expenditure (%)	114.42	54.50	68.58
13.	Ratio of administrative expenditure to total income (%)	31.41	28.81	35.95
14.	Reserves (nominal) at year-end	4.9	9.7	11.3
15.	Rate of growth of reserves (nominal) % p.a.	34.45	96.93	17.01
16.	Average rate of return per annum on nominal reserves (%)	9.41	14.57	2.13
17.	Average rate of return per annum on fixed assets and investments (%)	11.71	20.11	2.91
18.	Rate of inflation (% p.a.)	16.1	9.5	8.5

Source: *Audited Accounts*, government publications

1.3.3. The Public Service Pension Fund (PSPF)

The *Public Service Pensions Act of 1992* was enacted on 7 October 1992. It established an independent legal fund known as the PSPF, which replaced the responsibility of the

Department of Pensions for the provision of pensions and other benefits to public-sector employees. The Fund was actually only established on 1 July 1994 after a completed actuarial study estimated present liabilities, and those envisaged, as accruing in the future for services rendered by ex- and present members up to that date. The Government then decided that total liabilities in respect of pensioners as at 1 July 1994 and the share of liabilities accruing in respect of active members in service at that date (and accruing to their survivors) for services up to that date, shall be met by the Government, and other liabilities shall be met by the established Fund. According to an agreement reached between the Fund and the Ministry of Finance, the Government has agreed to provide annually a sum of money which will not be less than the amount that the Government would have paid had the Fund not been established.

1.3.3.1. Insurance coverage

The scheme covers all public servants other than those in grades 15, 16 and 17 and also employees in public-sector organizations.

1.3.3.2. Benefits

The Fund provides old-age, invalidity and survivors' benefits as well as certain other special benefits and EIB. However, there has been no separation of accounts or reserves between the PSB and the EIB, the two main benefit branches. The *Act* also provides for payment of enhanced and special pensions to certain special categories of workers under certain circumstances.

1.3.3.3. Contributions

The basic contribution rate is applicable to IE, which includes basic salary plus a cost-of-living allowance and any other allowances specified by the Minister (presently the housing allowance is included). There is no ceiling on IE.

Since the establishment of the pension fund, the Government has been paying to the Fund special contributions in addition to the normal employer's share of contributions equal to 17 per cent of IE of public servants who are members of the Fund. The respective employees pay 8 per cent of their IE to the Fund.

Out of total joint contributions, amounting to 25 per cent of IE, 23 per cent is intended for financing pension-scheme and special benefits and 2 per cent is intended for financing the EIB scheme.

The salient features of the PSPF scheme are given in Annex B.

As at 1 January 2003, the number of active members in the scheme was estimated at 350,000 and the number of beneficiaries was about 120,000 of which nearly 30 per cent are early retirees.

Contribution income received in the year 2002 was 6.411 billion SD and the amount received as special contributions from the Ministry of Finance was 8.251 billion SD. The amount of benefits paid was 9.085 billion SD.

A summary of a statistical analysis of the performance of the PSPF during the period 1999 to 2002 is given in Table 1.2

Table 1.2: PSPF – Statistical analysis of the performance during the period 1999-2002 (in SD '000)

		1999	2000	2001	2002
1.	Contribution income	1,591,319	2,653,346	3,343,994	6,411,056
2.	Rate of growth of contribution income (% p.a.)	(20.30)	66.74	26.03	91.72
3.	Contribution from Ministry of Finance to meet accrued liabilities	6,388,653	9,574,928	5,714,712	8,251,316
4.	Investment income	1,371,564	618,370	404,618	2,359,218
5.	Rate of growth of investment income (% p.a.)	30.47	(54.91)	(34.57)	483.07
6.	Total income (contribution + investment income)	2,962,883	3,271,716	3,748,612	8,770,274
7.	Administrative expenditure	628,069	893,209	968,864	831,572
8.	Rate of growth of administrative expenditure (% p.a.)	(4.19)	42.22	8.47	(14.17)
9.	Benefit expenditure	4,145,748	5,539,982	5,248,064	9,084,658
10.	Rate of growth of benefit expenditure (% p.a.)	51.95	33.63	(5.27)	73.10
11.	Ratio of administrative expenditure to contribution income (%)	39.47	33.66	28.97	12.97
12.	Ratio of administrative expenditure to benefit expenditure (%)	15.15	16.12	18.46	9.15
13.	Ratio of administrative expenditure to total income (%)	21.20	27.30	25.85	9.48
14.	Reserves (nominal) at end of year	15,397,544	23,060,074	26,131,213	33,613,776
15.	Rate of growth of reserves (nominal) (% p.a.)	128.51	49.76	13.32	28.63
16.	Average rate of return per annum on nominal reserves (%)	13.21	3.27	1.66	8.22
17.	Rate of inflation (% p.a.)	16.1	8.0	7.5	6.5

2. Review of the National Social Insurance Fund according to existing provisions

2.1. Legislative review

The National Social Insurance Fund (NSIF) was established on 25 April 1975 following the enactment of the *Social Insurance Act of 1974*. The *Act* provides for two branches of insurance, a LTBB providing old-age, invalidity and survivors' benefits and an employment injuries benefit branch (EIBB). Initially, the coverage included persons working for employers with thirty or more employees who had headquarters in one of five provinces. Later the coverage was extended to all provinces and it now applies to all employers with five or more employees. The Minister in charge of the NSIF has the power to extend coverage and widen the scope of IE, which now includes basic wages/salaries plus the cost-of-living and nature-of-work allowances.

The *Act* places the responsibility of registration on eligible employers, but in practice compliance is weak and there seems to be large-scale evasion especially because the NSIF enforcement activities are not strong.

The *Act* stipulates the penalties to be imposed for late payment and non-payment, but it appears that the provisions are not strictly enforced. Large-scale evasion of payment of contributions by registered private-sector employers is not common, but payments due from federal states in respect of insured public servants are often delayed and total contribution-liability-in-arrears is estimated to be about 4 billion SD as at 31 December 2002.

The *Act* stipulates that an actuarial valuation should be conducted once every five years, but this have not been done.

2.2. Institutional and administrative review

The NSIF administration is structured on a two-tiered basis – the headquarters at the national level and the service delivery offices at the local (or state) level. There are 26 NSIF service delivery offices situated in 19 of 26 states, meaning that some states have multiple offices while others in the south have no representation.

The main functions and responsibilities of the NSIF are typical of a social insurance institution:

- registration of eligible contributors (employers and employees);
- monthly collection and recording of contributions;
- acceptance, processing and payment of claims for pensions and other benefits;
- financial management of all investment, income and expenditure of the pension fund,
- provision of reports on the activities of the NSIF.

A general manager heads the NSIF administration, is responsible for day-to-day operations and reports to the governing Board of Directors.

At the national level, the NSIF has two assistant-general managers in charge of seven directorates and four other units reporting directly to the general manager, details of relevant activities are given in Annex A1.

Most of the public contact work is undertaken at the local-office level, and the main functions of the local offices are:

- registration of employers;
- registration of employees;
- collection of contributions;
- updating contribution records;
- receiving and preparing claims for pensions and other benefits;
- payment of pensions and benefits,
- ensuring compliance with registration and contribution obligations.

2.2.1. Evident shortcomings

There would appear to be considerable duplication of work throughout the operational area of the organization, particularly in the processing of contributions and claims. This has occurred principally because of the failure of the computer systems and the absence of online access to national databases. The work done in local offices is duplicated at national level as is the paper information flow.

Compliance with registration obligations is an ongoing problem for the NSIF, especially to do with the lack of authority to enforce employer compliance for registration and contribution. The number of unregistered eligible employers is unknown and there is no system to identify these cases other than local knowledge. Presently, the inspectors seem to function mainly as contribution collectors.

Due to past failures in the computer system, local offices do not as yet have access to databases for national contributions and registration. It is therefore necessary for examination and approval of claims for pension and other benefits to be undertaken nationally.

While contribution records are maintained on computer databases at local-office level, the records at national level have not been maintained. This has had major implications for the way work is currently undertaken, particularly in the area of claim processing.

Each of the 26 local state offices and the nine Khartoum offices has one stand-alone computer (PC) for local use only – there is no electronic transfer of data from the local offices to national headquarters.

A new computer system is currently being developed by a team of contractors to replace the current FOXPRO system. It is intended that the state and Khartoum local operational-office system be connected to the central system using a Wide Area Network communications system.

Data currently recorded on local databases will be converted for use by the new system. It has been recognized, however, that these records will require editing and updating, as all fields on all records are not necessarily correct and complete.

The contractor will be responsible for the conversion of currently held data on local level PCs to the new system, which provides for a national database system containing records of all registered employers and employees, and which will be available for access by all offices. This will provide local offices with online access to all contributions records, and should result in major operational changes throughout the NSIF, enabling much of the operational work now performed at national level to be decentralized to local offices.

2.3. Financial review of past performance

Table 1.1 provided a summary of a statistical analysis of the performance of the NSIF and Tables 2.1 and 2.2 gives summarized versions of the financial statements as per the audited accounts. It was observed that some figures appearing in annual reports did not agree with corresponding figures in audited accounts, a discrepancy with which NSIF officials concurred, as the annual reports are prepared from different-source documents (that is, from returns of various offices spread across the country) and these may not be very accurate.

2.3.1. Demographic developments

As complete member records were not readily available it was not possible to make a comprehensive study of the growth of the membership. However, the available statistics indicate that the rate of growth during the past four years has been negligible. Since the total number of active members from private-sector organizations amounts to not more than 150,000, it is evident that only a very small percentage of probable eligible members have been registered. Nearly 60 per cent of active members are from the public sector, but their contributions amount to only about 40 per cent of total contributions.

2.3.2. Income and expenditure

Tables 2.1 and 2.2 show the income and expenditure and the evolution of reserves of the NSIF during the financial years ending on 31 December for 1997, 1998, 1999 and 2000. During this four-year period, the nominal reserves (which include debtors – that is, the contributions to be received that represent nearly 36 per cent of the whole reserve as at the end of the year 2000) increased at an average rate of 32.67 per cent per annum and contribution income (received) had recorded a growth rate of 27.54 per cent per annum.

2.3.3. Benefit levels

The level of the benefits is low, the amount of the average pension being close to the level of the minimum pension (which was 4,000 SD as at 31 December 2002). The commutation of one-third of the pension entitlement has aggravated the situation. As only the minimum pension is being revised, almost all the pensions have converged to the level of the minimum pension. Only about 1.5 per cent of the total number of pensions-in-payment as at 31 December 2002 was for amounts higher than the minimum pension amount.

Table 2.3 gives a breakdown of the benefit payments made during the three years from 1999 to 2001. The majority of the benefit payments are for old-age benefits.

Table 2.1: NSIF – Income and expenditure statement (in SD millions)

Income	1997	1998	1999	2000
Contributions	1,515.7	2,592.5	3,728.1	4,010.3
Non-contributory	39.5	40.9	7.5	713.3
Profits from investments	126.7	262.5	841.5	33.8
Other investments	95.3	122.4	149.1	187.1
Total	**1,777.2**	**3,018.3**	**4,726.2**	**4,944.5**
(Less) Expenditure				
Employment injury benefits (EIB)	12.4	30.9	86.4	133.3
Retirement, disability and death benefits	333.5	786.5	2,407.8	2,084.4
Salaries and wages	274.7	243.1	373.0	671.4
General expenditures	382.1	692.2	986.3	849.5
Total	**1,002.9**	**1,752.7**	**3,853.5**	**3,738.6**
Surplus	**774.5**	**1,265.6**	**872.7**	**1,205.9**

Source: Audited Accounts

Table 2.2: NSIF – Balance sheets (in SD millions)

Assets	1997	1998	1999	2000
Fixed (land, buildings)	357.1	896.2	2,696.0	3,713.6
Long-term investments	783.0	1,387.0	438.6	846.4
Current				
Cash at banks and post office	528.1	1,196.5	2,644.3	3,747.6
Short-term investments	937.5	853.3	707.2	593.0
Debtors	1,391.0	2,406.7	4,424.1	4,044.4
Savings	13.2	18.9	16.4	-
Other debtors	1,070.3	7,186.0	14,252.4	16,338.0
Total	**5,080.2**	**13,944.6**	**25,179.0**	**29,283.0**
Liabilities (current)				
Bank	708.2	874.3	395.1	597.3
Creditors	1,993.0	65.1	1,419.4	64.1
Transferred pensions	-	-	-	594.1
Other creditors	505.5	1,002.3	2,430.5	3,356.1
Provisions	209.3	329.7	329.6	384.1
Total	**3,416.0**	**2,271.4**	**4,574.6**	**4,995.7**
Balance	**1,664.2**	**11,673.2**	**20,604.4**	**24,287.3**

Table 2.3: NSIF – Breakdown of benefit payments during the period 1999-2001

Annual pensions		**No. of new cases**			**Amount of claims** (in SD '000)			**Cumulative number of claims from 1975**		
	Type of pension	**1999**	**2000**	**2001**	**1999**	**2000**	**2001**	**1999**	**2000**	**2001**
1	Retirement	2,863	3,258	3,597	244,646	427,631	914,675	19,227	22,485	26,082
2	Early retirement	1,339	1,247	1,702	152,478	190,058	178,897	8,496	9,743	11,445
3	Ministerial Termination	893	2,196	1,197	127,322	190,058	252,236	7,409	9,605	10,802
4	Death due to natural causes	1,223	1,091	1,438	237,492	273,208	454,402	13,185	14,276	15,714
5	Accidental death	63	51	63	340	11,879	21,180	639	690	753
6	Partial disability	158	175	267	52,218	58,205	54,698	2,911	3,086	3,353
7	Ill heath	222	147	132	33,138	35,636	59,399	1,873	2,020	2,152
8	Permanent disability	9	1	4	630	1,188	6,011	35	36	40
	Total	**6,770**	**8,166**	**8,400**	**848,264**	**1,187,863**	**1,941,498**	**53,775**	**61,941**	**70,341**
Lump-sum payments										
	Type of benefits									
1	Termination of employment	4,616	9,753	12,108	148,529	483,163	770,081	37,479	47,232	59,340
2	Resignation	1,695	2,511	1,839	232,654	111,039	147,904	13,147	15,658	17,497
3	Ministerial sacking	280	2,864	957	1,475	41,679	22,479	4,938	7,802	8,759
4	Retirement	392	1,280	953	16,616	35,316	38,611	29,729	31,009	31,962
5	Death due to natural causes	86	62	47	9015	3,486	2,910	6,229	6,291	6,338
6	Accidental death	4	0	0	85	0	0	175	175	175
7	Resignation due to marriage	22	88	80	1,143	4,541	6,768	3,598	3,686	3,766
8	Partial disability	0	0	0	0	0	0	212	212	212
9	Permanent disability	0	0	0	0	0	0	3	3	3
10	Ill health	0	0	0	0	0	0	3,000	3,000	3,000
11	Emigration	0	0	0	0	0	0	2,361	2,361	2,361
12	Withdrawal	0	0	0	0	0	0	2,853	2,853	2,853
	Total	**7,095**	**16,558**	**15,984**	**409,517**	**679,224**	**988,753**	**103,724**	**120,282**	**136,266**

As noted, the contributions are based on an insured salary, which comprises the basic salary of an employee and few other allowances, whereas the other allowances paid to most employees (especially to those in the public sector) and not taken into account constitute a very high percentage of the total earnings of the employee. Hence, it is evident that the contribution base is low compared to the actual earnings of the members. Consequently, the contribution income and the level of the benefits are relatively low.

Almost all pensioners commute one-third of their pension entitlement, but the remaining two-thirds, which is paid as a pension, is revalued if the whole pension amount falls below the level of the minimum pension. This method of revaluation causes certain anomalies between pensioners (for example, a person who has contributed more could receive a lower pension amount than a person with the same period of contribution but has contributed less). The current level of the minimum pension is very high when compared with the current average earnings of the members, especially those in the public sector. This practice in conjunction with the low average of IE of the members causes a significant financial strain on the scheme.

2.3.4. Investments

2.3.4.1. Return on the Fund

During the three-year period 1998 to 2000, the average rate of return on nominal reserves – which includes contributions in arrears – was 9.41 per cent, 14.57 per cent and 2.13 per cent, respectively. The invested assets (long- and short-term investments including land and buildings) form nearly 45 per cent of the total Fund. (The ratio is relatively low as the figure for the Fund includes contributions to be received). The rate of return on fixed assets and investments was 11.71 per cent, 20.11 per cent and 2.91 per cent, respectively. It is evident that during the same period, the rate of inflation was 16.1 per cent, 9.5 per cent and 8.5 per cent, respectively. The low rate of return on investments of the Fund was attributed to large-scale investment in property development on which the gestation period is very long. The average rate of return on reserves is less than the average rate of increase in IE. In the previous actuarial valuation, when recommending a contribution rate of 23 per cent of IE for financing of pension benefits, the Actuary had assumed that, on average, the rate of return on the Fund would exceed the rate of increase of IE by at least 3 percentage points, but this assumption has not been realized.

2.3.4.2 Type of investments held

From available records, it seems that the main investments of the Fund as at 31 December 2001 consisted of properties, investments in commercial trading, loans, bank deposits, shares and profit-sharing investments in business. The investments in property/property development accounted for about 70 per cent of the total invested assets of the Fund, but the share of investment income generated by such investments is much lower than that figure, perhaps due to the long gestation period inherent with returns on property development. It is reported that some properties are held in anticipation of high returns due to significant increases in their value. However, it is not clear whether anticipated returns have been estimated using appropriate risk discount rates

Although trading activities are said to be yielding high returns, in view of the high risks involved, it is not considered prudent for a social insurance fund such as NSIF to run the risk of jeopardizing member contributions on such ventures, nor to divert its attention from its primary responsibility of providing social security benefits. People with specialized skills and experience are generally involved in trading activities; it is questionable whether the NSIF has sufficient such people.

A complete breakdown of the investment portfolio and the income received from each type of investment was sought from the NSIF in order to make a detailed study/comparison of investment performance but this information was not received by the Actuary.

2.3.5. Administration expenses

In the financial year ending 31 December 2000, the administration expenses were 37.93 per cent of contribution income (more than 9 per cent of IE) and 68.58 per cent of benefit expenditure. As a ratio of the total income of the Fund, administration expenses were 35.95 per cent in the year 2000 whereas the *Act* stipulates that it should not exceed 10 per cent. Based on the experience of other countries, where similar schemes are in operation, NSIF administration expenses should not exceed 3 per cent of IE, whereas in the recent past the level has been much higher.

The costs involved in collecting contributions from employers/employees vary considerably in different parts of the country. Furthermore, in spite of the comprehensive computerization program introduced recently, present operations involve much paper/manual work, which contribute toward high administration expenses. According to NSIF relevant officials, the full impact of the computerization program is yet to be seen, and if anticipated benefits materialize administration expenses could drop considerably.

2.4. Demographic and financial projections according to existing provisions

2.4.1. Methodology adopted for actuarial evaluation of long-term benefits branch (LTBB) (pension scheme)

The actuarial valuation of the cost of a pension scheme involves the estimation of future benefit expenditure and the contribution base over the long term.

The assessment of the pension scheme's future benefits and contributions was done by way of actuarial projections where, based on certain economic and demographic assumptions, the operation of the scheme was simulated on a year-by-year basis using the computer-based ILO Pension Model. The comprehensive methodology developed by *ILO-FACTS* could not be strictly adhered to due to the paucity of required reliable national statistics. Hence, the Model had to be modified and used with available data. There were two stages to the projections as follows:

- Demographic projections: Estimation of the number of contributors and the various categories of pensioners and other beneficiaries in each of future years of the projection period.

- Financial projections: Estimation of amounts of expected insurable earnings in future years and amounts of benefits that would become payable in future years to different categories of beneficiaries.

Because of the long-term nature of the benefits, the assumptions were set so that they reflected possible long-term trends rather than recent experience.

However, the validity of the estimates made is linked to the realization of the assumptions underlying the projections. Changes in the demographic structure of the insured population as well as variations in salary distributions can give rise to results, which differ from those projected. Hence, periodical actuarial reviews are necessary to assess the consistency of assumptions made and to adjust them if necessary.

The main objective of pension projections is not to forecast exact amounts of pension expenditure and contribution income but to check the financial viability of the scheme, i.e. the relative balance between future income and expenditure.

The methodology adopted for this study and the information normally required to use the ILO Model are described in Annex F.

2.4.2. Data base as at valuation date

2.4.2.1. Initial insured population

The NSIF had not updated individual member contribution records for nearly four years (after 31 December 1998). However with the help of other records NSIF was able to identify members who had contributed at least once during the preceding period of 12 months and furnish certain data in respect of a sample of such members – but the data relating to the active members (members who had made at least one contribution in the preceding 12 months) that was submitted by the NSIF was found to be of poor quality. Hence, after cleaning the data by means of appropriate edit checks, two samples, which consisted of about 102,000 public-sector employees and 92,000 private-sector employees who had been active during the preceding 12 months, were identified in order to develop the distribution of the assumed initial-insured population of the scheme. For this purpose, it has been assumed that the total active-insured population would have the same age/gender distributions as the members in the two samples. NSIF senior management had estimated the total number of NSIF active members from the public sector to be 180,000 and from the private sector to be 150,000. The assumed age/gender distribution of the initial-insured population from the public sector is given in Table 2.4 and that of the assumed population from the private sector is given in Table 2.5.

In addition to those people who had contributed during the preceding 12 months, the scheme covers others who had contributed in the past but not in the said period of 12 months (known as inactive persons). The records maintained by the NSIF indicate that gthere are around 850,000 inactive persons. The age, gender/past contributions, and so on, of two large samples of inactive persons from the public and private sectors were provided by the NSIF. However, this data also had to be adjusted/smoothed out as many deficiencies and inconsistencies were observed. The distribution of the whole inactive population of each sector was assumed to be the same as that of the adjusted data of the given samples; these assumed distributions according to age and gender are given in Tables 2.6 and 2.7.

2.4.2.2. Pensioners

The data relating to different categories of pensioners and survivors receiving pension benefits as at the date of valuation were provided by the NSIF. However, the classification of survivors to widows/widowers and orphans was not available. Hence, in the projections it has been assumed that the whole pension amount is payable to the widow/widower. This would slightly overestimate the liabilities. The data used in the valuation are shown in Tables 2.8 and 2.9. It has been further assumed that 60 per cent of the initial group of pensioners are public-sector pensioners and 40 per cent are private-sector pensioners.

Table 2.4 NSIF – Initial insured population (Public-sector)

Age range	Males				Females			
	No.	Average past service	Total past contributions	Average monthly insured salary	No.	Average past service	Total past contributions	Average monthly insured salary
		(in months)	(in SD millions)	(in SD)		In months	(in SD millions)	(in SD)
1	**2**	**3**	4	**5**	**6**	**7**	**8**	**9**
15 – 19	73	21.60	0.4	4,212	18	20.80	0.0	4,212
20 – 24	877	44.38	10.2	4,595	118	46.05	1.6	5,089
25 – 29	5,886	71.02	121.9	5,106	1098	72.45	23.2	5,115
30 – 34	16,156	81.08	383.9	5,132	4362	86.00	145.7	5,140
35 – 39	19,089	111.65	627.6	5,157	5950	105.72	186.5	5,191
40 – 44	31,136	133.90	1,234.0	5,183	7222	131.02	281.0	5,201
45 – 49	25,326	160.40	1,214.1	5,234	5808	140.68	247.0	5,293
50 – 54	23,839	178.15	1,386.9	5,719	4775	145.77	222.5	5,598
55 – 59	23,760	188.40	1,533.7	6,000	4507	163.64	251.3	5,967
Total	146,142		6,512.7		33,858		1,358.8	

Source: Sample data furnished by the Computer Department

Table 2.5: NIF – Initial insured population – Private sector

Age range	Males				Females			
	No.	Average past service	Total past contributions	Average monthly insured salary	No.	Average past service	Total past contributions	Average monthly insured salary
		(in months)	(in SD millions)	(in SD)		(in months)	(in SD millions)	(in SD)
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
15 – 19	80	27.76	1.1	8,710	25	24.80	0.3	8,515
20 – 24	849	46.98	30.7	13,438	244	52.05	9.7	13,395
25 – 29	8,066	50.98	318.2	13,572	1,920	68.45	104.5	13,931
30 – 34	24,680	54.75	1,119.9	14,514	5,772	86.00	402.4	14,198
35 – 39	21,968	69.67	1,351.0	15,455	4,559	105.72	412.9	15,002
40 – 44	34,665	87.20	2,969.3	17,202	3,656	131.02	451-0	16,476
45 – 49	21,196	113.20	2,485.7	18,142	2,006	140.68	284.9	17,681
50 – 54	11,947	123.24	1,694.8	20,157	1,000	145.77	154.0	18,484
55 – 59	6,844	129.36	1,121.1	22,175	523	163.64	94.9	19,424
Total	130,295		11,091.8		19,705		1,914.3	

Source: Sample data furnished by the Computer Department

Table 2.6: NSIF – Inactive members (Public-sector)

Age range	Males			Females		
	No.	Total contributions (in SD millions)	Average no. of months of contributions per person	No.	Total contributions (in SD millions)	Average no. of months of contributions per person
1	2	3	4	5	6	7
15 – 19	80	0.0	8.96	5	0.0	7.92
20 – 24	297	0.2	11.33	37	0.0	10.27
25 – 29	412	0.4	13.55	425	0.4	13.24
30 – 34	15,196	17.2	14.98	1,981	2.4	16.64
35 – 39	32,089	39.9	27.10	3,063	5.2	24.40
40 – 44	81,628	113.3	44.39	5,030	10.2	38.25
45 – 49	83,824	133.3	79.28	4,522	9.7	71.83
50 – 54	62,659	101.6	96.82	3,109	7.4	91.44
55 – 59	42,661	71.9	125.32	2,103	5.6	101.13
Others	71,729	125.4	105.01	3,024	8.4	99.31
Total	390,575	603.2		23,299	49.3	

Source: Sample Data furnished by the Computer Department

Table 2.7: NSIF – Inactive members (Private sector)

Age range	Males			Females		
	No.	Total contributions (in SD millions)	Average no. of months of contributions per person	No.	Total contributions (in SD millions)	Average no. of months of contributions per person
1	2	3	4	5	6	7
15 – 19	115	0.1	7.98	4	0.0	8.86
20 – 24	280	0.7	11.47	37	0.1	12.94
25 – 29	3,670	11.4	12.54	814	3.9	14.11
30 – 34	1,7896	62.5	14.30	3,466	17.3	18.67
35 – 39	43,178	168.0	19.76	3,889	24.2	23.26
40 – 44	123,266	596.5	27.42	4,990	36.3	31.76
45 – 49	104,356	530.0	37.87	3,356	26.4	49.39
50 – 54	62,134	338.7	49.19	1,857	15.4	52.83
55 – 59	28,806	185.5	57.75	886	7.4	55.26
Others	32,768	217.3	50.75	922	8.1	50.23
Total	416,469	2,110.7		20,221	139.1	

Source: Sample data furnished by the Computer Department

Table 2.8. NSIF pensioners as at valuation date

Age range	Males				Females			
	Old-age, early retirements and Ministerial Terminations		Ill-health retirees		Old-age, early retirements and Ministerial Terminations		Ill-health retirees	
	No.	Monthly pensions (in SD)	No.	Monthly pensions (in SD)	No.	Monthly pensions (in SD)	No.	Monthly pensions (in SD)
1	2	3	4	5	6	7	8	9
30-34	-	-	131	524,000	-	-	7	28,000
35-39	1,601	5,123,000	177	708,000	85	272,000	9	36,000
40-44	5,066	16,211,000	287	1,148,000	267	854,000	15	60,000
45-49	10,624	37,140,000	352	1,408,000	560	1,958,000	19	76,000
50-54	4,059	15,026,000	315	1,260,000	214	792,000	17	68,000
55-59	1,957	7,245,000	300	1,200,000	103	381,000	16	64,000
60-64	14,817	59,268,000	290	1,160,000	780	3,120,000	15	60,000
65-69	6,538	26,152,000	213	852,000	344	1,376,000	14	56,000
70-	6,375	25,500,000	100	400,000	335	1,340,000	3	12,000
Total	51,037	191,665,000	2165	8,660,000	2688	10,093,000	115	460,000

Table 2.9. NSIF survivors as at valuation date (valued assuming that the whole pension amount is paid to the spouse)

Age range of spouse (Female)	Female survivors		Age range of spouse (Male)	Male survivors	
	No.	Monthly pensions (in SD)		No.	Monthly pensions (in SD)
1	2	3	4	5	6
15-19	12	49,000	15-19	2	8,000
20-24	64	2,610,000	20-24	9	37,000
25-29	653	2,660,000	25-29	123	501,000
30-34	781	3,181,000	30-34	145	591,000
35-39	856	3,486,000	35-39	144	586,000
40-44	1,946	7,926,000	40-44	175	713,000
45-49	2,225	9,062,000	45-49	222	904,000
50-54	2,259	9,200,000	50-54	187	762,000
55-59	1,858	7,567,000	55-59	140	570,000
60 and over	4,978	20,274,000	60 and over	207	843,000
Total	15,632	63,666,000	Total	1354	5,515,000

2.4.2.3. Insurable earnings

As noted, the NSIF contribution records of individual members had been updated only to 31 December 1998. These records in respect of the sample of active-insured persons were also found to be inconsistent in many respects. Hence, the given data were smoothed out to arrive at an assumed average IE as at 31 December 1998, according to the members' age and gender. The average IE were then adjusted by applying the

- assumed-average-salary escalation rates during the subsequent four years from 1999 to 2002 (at 20 per cent, 33 per cent, 29 per cent, 14 per cent for private-sector, and 26 per cent, 35 per cent, 24 per cent, 15 per cent for public-sector employees) and the

- assumed-average contribution density factors (see section 5.1.4) in order to arrive at the estimated average IE as at 31 December 2002. The assumed average IE as at valuation date is shown in columns 5 and 9 of Tables 2.4 and 2.5.

2.4.2.4. Density of contribution

This represents the average proportion of the year during which an active-insured person actually contributes to the scheme. This variable is applied to the annual rate of IE (12 times the monthly IE presented in Tables 5 and 6) in order to determine the actual IE from which contributions are expected to be received in a year, taking into account periods of absence of earnings during a given year. The density of contribution has been assumed to stay constant over the whole projection period.

The densities of the contributions assumed for this valuation are based on the opinions expressed by NSIF senior officers, as detailed contribution records of individual members were not readily available to calculate the experienced densities. The assumed rates are 80 per cent for private sector employees and 90 per cent for those in the public sector.

2.4.3. Demographic and economic assumptions

2.4.3.1. Invalidity rates

The rates adopted in the projections are based on the invalidity rates of the Italian experience and have been derived by adjusting the basic rates to reflect the past experience of the NSIF. The assumed invalidity rates are taken to be constant for the whole projection period and are given in Table 2.10 below.

2.4.3.2. Mortality rates of insured persons

The mortality rates used in the projections are 90 per cent of the mortality rates as per the *UN population table* for Sudan. Sample mortality rates are given in Table 2.11. The life expectancy at age 60 according to the adopted rates is 12.87 years for males and 13.21 years for females.

Table 2.10 NSIF – New entrants (Assumed distribution)

Age range	Males (out of 100)	Females (out of 100)
1	2	3
15 - 19	0.28	0.24
20 - 24	7.33	6.25
25 - 29	19.46	18.75
30 - 34	19.68	22.62
35 - 39	12.29	14.91
40 - 44	13.23	13.04
45 - 49	11.63	10.96
50 - 54	9.18	7.91
55 - 59	6.92	5.32
Total	**100.00**	**100.00**

Source: Computer Department

Table 2.11. Assumed mortality rates of active lives

Age group	Males	Females
1	2	3
10 – 14	0.002827	0.002726
15 – 19	0.003523	0.002954
20 – 24	0.004819	0.003638
25 – 29	0.005338	0.004267
30 – 34	0.005607	0.004847
35 – 39	0.006362	0.005626
40 – 44	0.007612	0.006568
45 – 49	0.009647	0.007814
50 – 54	0.012786	0.010054
55 – 59	0.017416	0.013902
60 – 64	0.025229	0.020841
65 – 69	0.038252	0.032989
70 +	0.195569	0.175629

Rates represent the probability of death within one year.
Source: *UN Population Table*.

2.4.3.3. Other decrement rates

Other decrement rates assumed for the projections are shown in Table 2.12.

Table 2.12. Assumed other decrement rates (per 100 members of a given age)

Public-sector

Age range	Early retirements		Ministerial terminations		Transfers to PSPF	
	Male	Female	Male	Female	Male	Female
1	2	3	4	5	6	7
15 – 19	0	0	0	0	0	0
20 – 24	0	0	0	0	0	0
25 – 29	0	0	1.40	0.05	0	0
30 – 34	0	0	1.35	0.18	0	0
35 – 39	0	0	1.33	0.20	0	0
40 – 44	0	0	1.29	0.43	1.00	1.00
45 – 49	0.48	0.54	1.27	1.02	1.50	1.50
50 – 54	0.95	1.11	1.24	1.10	2.50	2.50
55 – 59	1.27	1.93	1.10	1.22	3.00	3.00

Private-sector

Age range	Early retirements		Resignations	
	Male	Female	Male	Female
1	2	3	4	5
15 – 19	0	0	0.10	0.10
20 – 24	0	0	8.23	8.23
25 – 29	0	0	2.86	2.86
30 – 34	0	0	1.78	1.78
35 – 39	0	0	1.43	1.43
40 – 44	0	0	0.90	0.90
45 – 49	1.07	0.65	0.87	0.87
50 – 54	2.86	6.40	0.70	0.70
55 – 59	5.66	9.28	0.66	0.66

Source: Computer Department.

2.4.3.4. Family structure

Information on the family structure of the insured person is necessary for the projection of survivors' benefits in order to estimate the quantum of benefits payable on their death. Assumptions had to be made on the:

- probability of being married;

- age difference between spouses;
- average number of children eligible for a child supplement; and
- average age of those children.

In the absence of reliable published statistics on the family structure of the insured population, the factors used in the valuation are based on the opinions expressed by NSIF senior officers, and are shown in Table 2.13.

Table 2.13: NSIF - Assumptions regarding survivors

- **For survivors of deceased insured males**

Age at death	Percentage married out of the deceased males	Average number of dependent children	Average age of the dependent children
1	2	3	4
15 - 19	02.2	1	2
20 - 24	16.6	2	3
25 - 29	48.9	2	4
30 - 34	74.0	3	5
35 - 39	83.7	4	8
40 - 44	87.5	4	9
45 - 49	87.2	3	10
50 - 54	86.0	2	10
55 - 59	84.7	1	11
60 +	80.2	0	0

- **For survivors of deceased insured females**

Age at death	Percentage married out of the deceased females	Average number of dependent children	Average age of the dependent children
1	2	3	4
15 - 19	19.7	1	2
20 - 24	55.9	2	3
25 - 29	72.0	3	5
30 - 34	76.5	4	8
35 - 39	77.5	3	9
40 - 44	74.2	2	10
45 - 49	67.5	1	11
50 - 54	58.5	1	12
55 - 59	51.2	1	14
60 +	41.1	0	--

Source: NSIF officials

2.4.3.5 Rate of growth of the active-insured population (the contributors)

The NSIF presently covers only a very small percentage of the employed population in the private sector, probably mainly due to the unsettled conditions still prevailing in certain parts of the country. Hence, it is very unlikely that the growth of the insured population will have a strong correlation to the rate of growth of the total labour force of the country. Therefore, the rates of growth of the insured population assumed for the projections are the rates of growth anticipated by NSIF and PSPF senior officers, and are as follows:

- Private-sector employees

  6 per cent in year 1;

  5 per cent in years 2 and 3;

  4 per cent in year 4;

  3 per cent per annum thereafter;

- Public-sector employees

  1 per cent per annum in years 1 to 3.

  0 per cent per annum from year 4 onwards

2.4.3.6. Future inflation rate

During the past four years, the inflation rate has decreased appreciably and the authorities are confident that it could drop further. Hence, for this valuation, from projection year four onwards an inflation rate of 4 per cent per annum was assumed.

2.4.3.7. Rate of escalation of insurable earnings (IE)

Normally, there is correlation between the rate of salary escalation (the increases granted to compensate the increase in the cost of living) and the rate of inflation in a country. In Sudan, the rate of inflation decreased substantially during the previous four years and is expected to drop further. However, it is evident that in the past the rates of increase in salaries have been lower than prevailing rates of inflation; therefore officials believe that increases in the next few years will be more than the rates of inflation in order to partially mitigate the loss of purchasing power of earnings. With the concurrence of relevant NSIF and PSPF senior officers, the following average rates of escalation of IE have been assumed in the actuarial projections.

- Public-sector employees:

  10 per cent in year 1 and 2;

  8 per cent per annum in year 3;

  6 per cent per annum in years 4 and 5,

  5 per cent per annum from year 6 onwards.

- Private-sector employees:

  10 per cent in year 1;

  8 per cent in year 2,

  6 per cent per annum thereafter.

The above assumptions imply that from year six onwards the average rate of salary escalation will exceed the average rate of inflation of private-sector employees by 2 percentage points and that of public-sector employees by 1 percentage point.

The salary increase in consideration of years of service, promotions, increase in productivity is depicted in the relative salary scale functions chosen for the projections and these are shown in Table 2.14.

Table 2.14. Relative salary scales for NSIF

Age group	Public-sector		Private-sector	
	Males	Females	Males	Females
1	2	3	4	5
15 – 19	100	100	100	100
20 – 24	110	110	130	130
25 – 29	120	120	150	160
30 – 34	123	125	160	170
35 – 39	128	130	180	180
40 – 44	133	135	200	195
45 – 49	135	138	220	210
50 – 54	140	140	240	225
55 –59	145	145	260	235

Source: Sample data furnished by the Computer Department.

2.4.3.8. Rate of return on investments

This represents the average rate of interest assumed in order to estimate the future investment income of the scheme. It should represent the expected average long-term rate of return on the investment of the reserves of the scheme. High rates of interest are normally associated with high inflation rates. The rate of return on investments obtained from 1998 to 2000 is shown in Table 1.1 (see section 1.3.2.4.).

With the concurrence of NSIF senior officers the rates of interest assumed in this valuation are as follows:

- 6 per cent in years 1 and 2
- 6.5 per cent in years 3 and 4
- 7 per cent per annum from year 5 onwards.

What is significant in the actuarial valuation conducted for determination of the required contribution rate is the difference in the long-term, between the assumed values of future interest, salary escalation and inflation rates rather than their absolute values. When the gap between assumed interest rates and salary escalation rates is higher, it would lead to lower contribution rates and vice versa.

The adopted assumptions imply that a real interest rate (the nominal interest rate minus the rate of inflation) of 3 per cent per annum will be obtained from year five onwards.

2.4.3.9. Adjustment of pensions

For the status quo projections, it has been assumed that only the minimum pension will be adjusted each year and the adjustments will be made at the following rates as suggested by NSIF senior officers:

- 12.5 per cent on 1 August 2003 and thereafter at 10 per cent, 8 per cent, 6 per cent, 6 per cent per annum and 5 per cent per annum in subsequent years, and assuming that the minimum pension as at 31 December 2002 = 4,000 SD, and at 1 August 2003 = 4,500 SD

It has also been assumed that all new pensioners (old-age and invalidity) will commute one-third of the pension amount, as present commutation factors are generous.

2.4.3.10. Gender/age distribution of new entrants

The assumed distributions for gender/age distribution of new entrants were based on the actual experience of the scheme during the preceding three years and are shown in Table 2.10 (see section 2.4.3.2.).

On the advice of NSIF senior officers, it has been assumed that 70 per cent of all future new entrants will be females. Also assumed is the starting IE of the first group of new entrants in that it will be the same as assumed average IE of the insured population (of the same ages) as at valuation date. For each subsequent group of new entrants, the starting average of IE is increased to reflect the assumed annual salary escalation due to the increase in the cost of living. Relative salary scales for new entrants after they enter the scheme are assumed to be the same as relative salary scales of the initial population.

2.4.3.11. Transfer values payable to PSPF

It is assumed that all the future transfer values will be calculated as per the factors given in Table 2.15.

2.4.3.12. Initial reserves

Based on unaudited accounts as at 31 December 2001 and budget estimates for the year 2002, and with the concurrence of NSIF senior officers, it has been assumed that the total reserve of the Fund as at the valuation date is equal to 26,000 million SD and the amount of reserve attributable to various sectors is to be as follows:

- active public servants and pensioners = 9,000 mn. SD
- active private-sector employees and pensioners = 14,000 mn. SD
- inactive persons = 3,000 mn. S D.

Table 2.15: NSIF – Factors used for calculation of transfer values

Period of service																	
Age	**0 - 5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**
JP to 25	1.63	1.39	1.22	1.09	0.99	0.91	0.84	0.79									
26	2.03	1.73	1.51	1.35	1.22	1.12	1.03	0.96	0.90								
27	2.43	2.06	1.80	1.61	1.45	1.32	1.22	1.13	1.06	1.00							
28	2.68	2.42	2.03	1.86	1.68	1.53	1.41	1.31	1.22	1.15	1.08						
29	2.75	2.51	2.39	2.12	0.91	1.74	1.60	1.49	1.39	1.30	1.23	1.16					
30	2.84	2.68	2.56	2.38	2.24	1.95	1.76	1.68	1.55	1.45	1.37	1.30	1.23				
31	2.92	2.75	2.62	2.54	2.38	2.16	1.99	1.84	1.72	1.61	1.51	1.43	1.36	1.29			
32	3.00	2.81	2.68	2.59	2.51	2.38	2.18	2.02	1.88	1.76	1.66	1.57	1.49	1.42	1.35		
33	3.07	2.88	2.74	2.64	2.56	2.50	2.38	2.20	2.05	1.92	1.81	1.71	1.62	1.54	1.47	1.40	
34	3.15	2.94	2.79	2.69	2.81	2.54	2.48	2.38	2.22	2.08	1.95	1.85	1.75	1.66	1.59	1.52	1.45
35	3.23	3.00	2.85	2.74	2.65	2.58	2.53	2.49	2.38	2.23	2.10	1.98	1.88	1.79	1.71	1.63	1.58
36	3.30	3.07	2.90	2.79	2.69	2.62	2.57	2.52	2.48	2.39	2.25	2.12	2.01	1.31	1.83	1.74	1.67
37	3.38	3.13	2.96	2.83	2.74	2.66	2.60	2.55	2.52	2.48	2.40	2.26	2.15	2.04	1.95	1.86	1.78
38	3.46	3.13	3.01	2.88	2.78	2.70	2.64	2.59	2.55	2.51	2.48	2.40	2.28	2.17	2.07	1.97	1.89
39	3.53	3.25	3.06	2.92	2.82	2.74	2.67	2.62	2.58	2.54	2.51	2.49	2.41	2.29	2.19	2.09	2.00
40	3.60	3.31	3.11	2.97	2.88	2.77	2.70	2.65	2.60	2.57	2.54	2.51	2.49	2.42	2.31	2.21	2.11
41	3.67	3.38	3.16	3.01	2.90	2.81	2.74	2.68	2.63	2.59	2.56	2.54	2.52	2.50	2.43	2.32	2.23
42	3.74	3.43	3.22	3.06	2.93	2.84	2.77	2.71	2.66	2.62	2.59	2.56	2.54	2.52	2.50	2.44	2.34
43	3.79	3.48	3.26	3.1	2.97	2.87	2.80	2.74	2.69	2.64	2.61	2.58	2.56	2.54	2.53	2.51	2.45
44	3.84	3.53	3.31	3.14	3.01	2.91	2.83	2.76	2.71	2.67	2.63	2.61	2.58	2.56	2.55	2.53	2.52
45	3.88	3.57	3.34	3.18	3.05	2.94	2.86	2.79	2.74	2.69	2.66	2.63	2.60	2.58	2.56	2.55	2.54
46	3.91	3.60	3.37	3.21	3.08	2.97	2.89	2.82	2.76	2.72	2.68	2.65	2.62	2.60	2.58	2.57	2.56
47	3.93	3.62	3.40	3.23	3.10	3.00	2.92	2.85	2.79	2.74	2.70	2.67	2.64	2.62	2.60	2.59	2.58
48	3.94	3.63	3.42	3.25	3.12	3.02	2.94	2.87	2.81	2.76	2.72	2.69	2.66	2.64	2.62	2.61	2.59
49	3.94	3.64	3.43	3.27	3.14	3.04	2.96	2.89	2.83	2.79	2.74	2.71	2.68	2.66	2.64	2.62	2.61
50	3.93	3.63	3.43	3.27	3.15	3.05	2.98	2.91	2.85	2.80	2.76	2.73	2.70	2.68	2.65	2.64	2.63
51	3.9	3.62	3.42	3.27	3.16	3.06	2.99	2.92	2.87	2.82	2.78	2.75	2.72	2.69	2.67	2.66	2.64
52	3.88	3.59	3.40	3.26	3.15	3.06	2.99	2.93	2.88	2.84	2.80	2.76	2.74	2.71	2.69	2.67	2.66
53	3.80	3.55	3.38	3.24	3.14	3.06	2.99	2.93	2.89	2.84	2.81	2.78	2.75	2.73	2.71	2.69	2.68
54	3.72	3.50	3.34	3.21	3.12	3.04	2.98	2.93	2.89	2.85	2.82	2.79	2.76	2.74	2.72	2.70	2.69
55	3.63	3.43	3.28	3.17	3.09	3.02	2.97	2.92	2.88	2.85	2.82	2.80	2.77	2.75	2.74	2.72	2.71
56	3.51	3.34	3.22	3.12	3.05	2.99	2.95	2.91	2.87	2.85	2.82	2.80	2.78	2.76	2.75	2.74	2.72
57	3.37	3.23	3.13	3.06	3.00	2.95	2.92	2.88	2.86	2.83	2.82	2.80	2.78	2.77	2.76	2.75	2.74
58	3.20	3.10	3.03	2.98	2.94	2.90	2.88	2.86	2.84	2.82	2.81	2.79	2.78	2.77	2.76	2.76	2.75
59	3.00	2.95	2.91	2.88	2.86	2.84	2.83	2.81	2.80	2.80	2.79	2.78	2.78	2.77	2.77	2.76	2.76

Table 2.15 : NSIF – Factors used for calculation of transfer values (cont'd.)

Period of service																	
Age	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**
35	1.50																
36	1.60	1.54															
37	1.71	1.64	1.58														
38	1.82	1.75	1.68	1.62													
39	1.92	1.85	1.78	1.72	1.66												
40	2.03	1.95	1.88	1.81	1.75	1.69											
41	2.14	2.05	1.98	1.91	1.84	1.78	1.72										
42	2.25	2.16	2.08	2.01	1.94	1.87	1.81	1.76									
43	2.35	2.26	2.18	2.10	2.03	1.96	1.90	1.84	1.78								
44	2.46	2.37	2.28	2.20	2.13	2.06	1.99	1.93	1.87	1.81							
45	2.53	2.48	2.39	2.30	2.22	2.15	2.08	2.02	1.95	1.89	1.84						
46	2.55	2.54	2.49	2.40	2.32	2.24	2.17	2.10	2.04	1.98	1.92	1.86					
47	2.57	2.56	2.55	2.50	2.42	2.34	2.26	2.19	2.13	2.06	2.00	1.94	1.89				
48	2.58	2.58	2.57	2.56	2.52	2.44	2.36	2.28	2.21	2.15	2.09	2.02	1.97	1.91			
49	2.60	2.59	2.59	2.58	2.58	2.53	2.45	2.38	2.30	2.23	2.17	2.11	2.05	1.99	1.94		
50	2.62	2.61	2.60	2.60	2.59	2.59	2.55	2.47	2.39	2.32	2.25	2.19	2.13	2.07	2.01	1.96	
51	2.63	2.63	2.62	2.62	2.61	2.61	2.60	2.56	2.48	2.41	2.34	2.27	2.21	2.15	2.09	2.03	1.98
52	2.65	2.64	2.64	2.63	2.63	2.62	2.62	2.62	2.58	2.50	2.43	2.36	2.29	2.23	2.17	2.11	2.05
53	2.67	2.66	2.65	2.65	2.64	2.64	2.64	2.64	2.63	2.59	2.52	2.45	2.38	2.31	2.25	2.19	2.13
54	2.68	2.67	2.67	2.66	2.66	2.66	2.66	2.65	2.65	2.65	2.61	2.54	2.46	2.40	2.33	2.27	2.21
55	2.70	2.69	2.68	2.68	2.68	2.67	2.67	2.67	2.67	2.67	2.66	2.63	2.55	2.48	2.41	2.35	2.29
56	2.71	2.70	2.70	2.70	2.69	2.69	2.69	2.69	2.69	2.68	2.68	2.68	2.64	2.57	2.50	2.43	2.37
57	2.73	2.72	2.72	2.71	2.71	2.71	2.71	2.71	2.71	2.70	2.70	2.70	2.70	2.66	2.59	2.52	2.45
58	2.74	2.74	2.73	2.73	2.73	2.73	2.73	2.73	2.72	2.72	2.72	2.72	2.72	2.72	2.68	2.61	2.54
59	2.76	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.71	2.63

2.4.4. *Pension projections according to existing NSIF provisions*

2.4.4.1. Results of the projections for the status quo conditions: Scenario 1.

Assuming that:

- public servants would leave the NSIF scheme on reaching grade 14,
- the minimum pension only will be increased by 12.5 per cent, 10 per cent, 8 per cent, 6 per cent, 6 per cent, and 5 per cent per annum thereafter.

2.4.4.1.1 Demographic projections

The results are given in Table 2.16, which show the number of active members, different categories of pensioners and recipients of lump sums at quinquennial intervals during the next 50 years. Column 7 indicates the ratios of the number of old-age pensioners to the number of active-insured persons (pension dependency ratios). As indicated, the ratio increases from 18.19 per cent in the year 2003 to 47.98 per cent in the year 2033 and then reduces to 45.28 per cent by the year 2052. Column 12 shows the total number of beneficiaries**.**

2.4.4.1.2. Financial projections

Relevant results are given in Table 2.17, indicating at quinquennial intervals the expected amount of IE and the amount of benefits expected to be paid to different categories of beneficiaries in the future.

Column 10 indicates the ratios of the average-of-the-old-age pensions-in-payment to the average of the IE – replacement ratios.

It is evident that in respect of old-age pensions, the replacement ratio fluctuates from 38.77 per cent in the year 2003 to 32.18 per cent in the year 2052. The fluctuation and the relatively low level of the replacement ratio are due to the fact that

- in the projections, only the minimum pensions are assumed to be revised annually whereas the average IE are assumed to increase annually, and
- it has been assumed that only two-thirds of the initial pension becomes payable as a pension as one-third of the initial pension has been assumed to have been commuted at inception. This table illustrates the need to revalue all pensions-in-payment in order to ensure that the average pension would be always equal to a reasonable proportion of average IE.

The projected reserves of the Pension scheme according to assumed interest rates, salary and pension rate increases are shown in Table 2.18. It has been assumed that the rate of contribution available to finance the pension scheme is 24.25 per cent of IE and the provision for expenses would reduce from 8 per cent of IE in the year 2003, to 3 per cent of IE after five years. As noted the reserve gradually increases from 26,000 Mn. SD at the beginning of the year 2003 to 104,536 Mn. SD at the end of the year 2020 and then begins to decrease. The reserve is depleted by 2030.

The projected revenue and expenditure for the status quo conditions are shown in Table 2.19.

Table 2.16: NSIF – Results of the demographic projections for status-quo conditions

Year	Number of active insured members	Number of pensioners					Number of recipients of grants				Total number of beneficiaries
		Old-age	Invalids	Survivors	Total	Ratio of old-age pensioners to actives (%)	Retired	Others	Inactive members (Initial) Group	Total	
1	2	3	4	5	6	7	8	9	10	11	12
2003	333,848	60,739	2,413	18,241	81,123	18.19	4,112	137	8,436	12,685	93,808
2008	346,395	86,164	17,477	25,459	129,100	24.87	2,453	131	8,098	10,682	139,782
2013	355,427	108,058	22,536	33,460	164,054	30.40	3,859	144	6,868	10,871	174,925
2018	265,037	130,751	26,362	40,476	197,589	35.82	5,097	171	4,390	9,658	207,247
2023	375,269	159,416	28,891	45,888	234,194	42.48	5,625	191	1,522	7,338	241,533
2028	386,173	176,269	30,123	49,404	255,796	45.65	5,863	212	514	6,589	262,385
2033	397,801	190,877	30,221	51,225	272,323	47.98	6,075	224	63	6,362	278,685
2038	410,210	193,903	29,473	51,561	274,937	47.27	6,092	224	9	6,325	281,262
2043	423,465	193,651	28,170	50,701	272,522	45.73	6,128	225	2	6,355	278,877
2048	437,633	197,604	26,564	48,946	273,114	45.15	6,130	225	0	6,355	279,469
2052	449,677	203,607	25,221	47,193	276,021	45.28	6,225	231	0	6,456	282,477

Table 2.17: NSIF – Results of financial projections for status quo conditions (in SD Mn.)

Year	Insured salaries	Amount of annual pensions *			Total pensions	Lump-sums		Total benefits	** Old-age pension replacement rate %
		Old-age	Invalidity	Survivors'		Commuted pensions	Grants		
1	2	3	4	5	6	7	8	9	10
2003	38,479	2,716	117	941	3,774	896	1,388	6,058	38.77
2008	55,679	4,473	183	1,999	6,655	1,242	333	8,230	32.30
2013	76,360	7,703	327	3,522	11,552	2,406	587	14,555	33.19
2018	104,966	13,104	529	5,543	19,176	4,899	1,225	25,300	34.85
2023	144,614	22,168	779	8,026	30,973	7,847	1,945	40,765	36.09
2028	199,675	33,440	1,094	10,954	45,488	10,676	3,167	59,331	36.69
2033	276,291	49,642	1,465	14,496	65,603	14,756	4,768	85,127	37.45
2038	383,098	65,514	1,925	18,770	86,209	15,694	6,684	108,587	36.18
2043	532,262	84,366	2,574	23,933	110,873	21,210	9,019	141,102	34.66
2048	740,947	110,481	3,458	30,180	144,119	33,361	11,449	188,929	33.02
2052	966,735	140,825	4,397	36,286	181,508	45,418	14,490	241,416	32.18

* These amounts represent only the uncommuted portion of the pensions.
** These figures represent the ratio of the average pensions-in-payment to the average insured salaries.

Table 2.18: NSIF – Development of the reserves of the pension scheme for status quo conditions (in SD Mn.)

Year	Fund at the beginning of the year	Contribution income	Investment income	Benefits paid	Administrative expenses	Transfer value paid to PSPF	Fund at end of the year
1	2	3	4	5	6	7	8
2003	26,000	9,331	1,565	6,077	3,078	666	27,075
2004	27,075	10,269	1,684	5,304	2,964	764	29,995
2005	29,995	11,093	2,025	6,022	2,745	841	33,506
2006	33,506	11,874	2,270	6,586	2,448	905	37,711
2007	37,711	12,679	2,753	7,342	2,091	926	42,784
2008	42,784	13,502	3,120	8,247	1,670	933	48,556
2009	48,556	14,380	3,515	9,279	1,779	926	54,467
2010	54,467	15,316	2,920	10,355	1,895	918	60,535
2011	60,535	16,315	4,335	11,523	2,018	902	66,742
2012	66,742	17,381	4,750	13,006	2,150	882	72,834
2013	72,834	18,517	5,156	14,569	2,291	841	78,806
2014	78,806	19,730	5,551	16,294	2,441	811	84,542
2015	84,542	21,025	5,926	18,209	2,601	774	89,910
2016	89,910	22,406	6,272	20,265	2,772	723	94,827
2017	94,827	23,881	6,577	22,668	2,954	687	98,977
2018	98,977	25,454	6,823	25,309	3,149	654	102,141
2019	102,141	27,134	6,994	28,221	3,357	572	104,119
2020	104,119	28,927	7,075	31,458	3,579	549	104,536
2021	104,536	30,842	7,042	34,903	3,815	512	103,190

Table 2.19. NSIF- Projected revenue and expenditure for status quo conditions (figures in SD Mn.)

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2014
1. Revenue	10,896	11,953	13,118	14,144	15,432	16,622	17,895	19,236	20,650	25,282
Total insurable earnings	38,479	42,345	45,743	48,963	52,285	55,679	59,299	63,160	67,278	81,363
1.1. Contribution income	9,331	10,269	11,093	11,874	12,679	13,502	14,380	15,316	16,315	19,730
1.2. Investment income	1,565	1,684	2,025	2,270	2,753	3,120	3,515	3,920	4,335	5,551
2. Expenditure	9,155	8,268	8,767	9,034	9,433	9,917	11,058	12,250	13,541	18,735
2.1. Benefits	6,077	5,304	6,022	6,586	7,342	8,247	9,279	10,355	11,523	16,294
2.2. Pensions	3,775	4,255	4,749	5,277	5,903	6,654	7,494	8,355	9,269	12,821
Old-age	2,716	2,994	3,277	3,589	3,984	4,473	5,024	5,580	6,161	8,570
Public	1,680	1,928	2,182	2,442	2,744	3,094	3,469	3,830	4,194	5,627
Private	1,036	1,066	1,096	1,146	1,240	1,379	1,555	1,749	1,967	2,943
Invalidity, norm	117	127	138	150	164	183	207	233	262	363
Public	71	78	84	91	99	108	119	130	142	180
Private	46	49	53	59	66	75	88	103	120	183
Supervisors	941	1,135	1,334	1,539	1,755	1,999	2,263	2,542	2,846	3,888
Public	571	693	817	941	1,068	1,207	1,352	1,499	1,653	2,154
Private	370	442	517	598	687	792	911	1,044	1,194	1,734
Inactive persons	-	-	-	-	-	-	-	-	-	-
Public	-	-	-	-	-	-	-	-	-	-
Private	-	-	-	-	-	-	-	-	-	-
2.3. Grants	2,303	1,049	1,273	1,308	1,439	1,593	1,786	2,000	2,254	3,474
Commuted pension	896	609	803	958	1,092	1,242	1,422	1,608	1,809	2,757
Old-age	858	569	752	897	1,020	1,158	1,323	1,495	1,681	2,591
Public	450	439	540	582	609	638	662	683	708	802
Private	409	129	213	316	412	520	661	812	973	1,789
Invalidity	37	41	51	61	72	84	98	113	128	166
Public	22	21	24	26	27	28	29	30	31	31
Private	15	20	27	35	45	56	69	83	97	135
Inactive persons	-	-	-	-	-	-	-	-	-	-
Public	-	-	-	-	-	-	-	-	-	-
Private	-	-	-	-	-	-	-	-	-	-
Grant	1,388	421	452	332	328	333	347	375	429	703
Other	1,370	402	433	314	310	315	330	359	413	690
Public	121	65	68	81	96	123	153	194	240	443
Private	1,249	337	366	233	214	192	176	165	173	247
Inactive persons	19	19	18	18	18	18	17	17	16	13
Public	4	4	4	4	4	4	4	4	3	3
Private	14	14	14	14	14	14	13	13	13	11
2.4. Administrative cost	3,078	2,964	2,,745	2448	2,091	1,670	1,779	1,895	2,018	2,441
Provision for administrative expenses (%)	8	7	6	5	4	3	3	3	3	3
Balance without interest	176	2,000	2,326	2,840	3,246	3,585	3,322	3,066	2,774	995
3. Reserve at year-end	27,075	29,995	33,506	37,711	42,784	48,556	54,467	60,535	66,741	84,543

Table 2.19. NSIF- Projected revenue and expenditure for status quo conditions (figures in SD Mn.) (Cont'd.)

Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
1. Revenue	26,950	28,678	30,458	32,277	34,128	36,002	37,884	39,795	41,762	43,790
Total insurable earnings	86,700	92,397	98,477	104,966	111,893	119,288	127,183	135,613	144,614	154,226
1.1. Contribution income	21,025	22,406	23,881	25,454	27,134	28,927	30,842	32,886	35,069	37,400
1.2. Investment income	5,926	6,272	6,577	6,823	6,994	7,075	7,042	6,909	6,693	6,390
2. Expenditure	20,810	23,037	25,622	28,458	31,578	35,037	38,719	41,856	45,100	48,451
2.1. Benefits	18,209	20,265	22,668	25,309	28,221	31,458	34,903	37,788	40,768	43,824
2.2. Pensions	14,203	15,698	17,351	19,177	21,193	23,429	25,877	28,393	30,973	33,621
Old-age	9,530	10,581	11,767	13,105	14,612	16,319	18,219	20,171	22,169	24,213
Public	6,136	6,664	7,219	7,805	8,424	9,082	9,781	10,491	11,212	11'947
Private	3,394	3,917	4,548	5,299	6,188	7,237	8,439	9,681	10,956	12'267
Invalidity, norm	401	442	484	529	576	624	673	725	779	836
Public	194	209	225	241	259	277	296	316	337	359
Private	207	233	260	288	317	347	377	409	442	477
Supervisors	4,272	4,676	5,099	5,543	6,006	6,486	6,984	7,497	8,026	8,572
Public	2,333	2,520	2,716	2,919	3,129	3,347	3,572	3,804	4,042	4'288
Private	1,939	2,155	2,384	2,624	2,876	3,139	3,412	3,693	3,984	4'284
Inactive persons	-	-	-	-	-	-	-	-	-	-
Public	-	-	-	-	-	-	-	-	-	-
Private	-	-	-	-	-	-	-	-	-	-
2.3. Grants	4,005	4,567	5,317	6,132	7,028	8,029	9,027	9,395	9,794	10,203
Commuted pension	3,156	3,586	4,201	4,899	5,684	6,572	7,418	7,632	7,847	8,043
Old-age	2,979	3,399	4,005	4,694	5,472	6,354	7,194	7,399	7,604	7,787
Public	842	898	972	1,054	1,147	1,246	1,318	1,328	1,346	1'362
Private	2,137	2,502	3,034	3,640	4,326	5,108	5,876	6,071	6,258	6'425
Invalidity	176	186	196	205	212	218	224	233	243	255
Public	32	33	34	35	36	37	38	40	41	43
Private	145	154	162	170	175	180	186	193	202	212
Inactive persons	-	-	-	-	-	-	-	-	-	-
Public	-	-	-	-	-	-	-	-	-	-
Private	-	-	-	-	-	-	-	-	-	-
Grant	837	970	1106	1225	1337	1451	1604	1759	1,945	2158
Other	825	959	1096	1216	1329	1445	1599	1755	1,942	2156
Public	518	576	644	701	758	817	880	909	942	978
Private	306	382	452	515	571	629	719	846	1,000	1178
Inactive persons	12	11	10	9	7	6	5	4	3	2
Public	2	2	2	2	1	1	1	1	1	0
Private	10	9	8	7	6	5	4	3	2	2
2.4. Administrative cost	2,601	2,772	2,954	3,149	3,357	3,579	3,815	4,068	4,338	4627
Provision for administrative expenses (%)	3	3	3	3	3	3	3	3	3	3
Balance without interest	215	631	-1,742	-3,004	-4,444	-6,110	-7,877	-8,970	-10,037	-11,051
3. Reserve at year-end	89,909	94,828	98,976	102,141	104,120	104,536	103,188	100,637	96,809	91,688

Table 2.19. NSIF- Projected revenue and expenditure for status quo conditions (figures in SD Mn.) (Cont'd.)

Year	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
1. Revenue	68,480	71,190	74,077	77,128	80,368	83,824	87,527	91,473	95,648	100,073
Total insurable earnings	314,802	336,067	358,798	383,098	409,076	436,850	466,548	498,303	532,262	568,579
1.1. Contribution income	76,339	81,496	87,009	92,901	99,201	105,936	113,138	120,839	129,074	137,880
1.2. Investment income	-7,859	-10,306	-12,932	-15,773	-18,833	-22,113	-25,611	-29,366	-33,425	-37,808
2. Expenditure	103,031	107,869	113,861	120,081	126,539	133,196	140,058	148,322	157,070	166,363
2.1. Benefits	93,587	97,787	103,097	108,588	114,266	120,091	126,061	133,373	141,102	149,306
2.2. Pensions	73,652	77,642	81,830	86,208	90,792	95,556	100,380	105,487	110,873	116,586
Old-age	55,911	58,956	62,161	65,514	69,030	72,678	76,343	80,239	84,366	88,770
Public	21,342	22,282	23,267	24,303	25,391	26,536	27,723	28,967	30,277	31,661
Private	34,569	36,674	38,894	41,211	43,639	46,142	48,620	51,271	54,089	57,109
Invalidity, norm	1,631	1,722	1,819	1,925	2,039	2,161	2,291	2,429	2,574	2,728
Public	646	676	707	739	772	807	842	878	916	954
Private	984	1,046	1,113	1,186	1,267	1,355	1,449	1,550	1,658	1'774
Supervisors	16,110	16,965	17,849	18,770	19,724	20,716	21,746	22,820	23,933	25,088
Public	7,429	7,753	8,082	8,416	8,755	9,100	9,451	9,807	10,170	10,537
Private	8,681	9,212	9,768	10,354	10,969	11,616	12,295	13,012	13,763	14,551
Inactive persons	-	-	-	-	-	-	-	-	-	-
Public	-	-	-	-	-	-	-	-	-	-
Private	-	-	-	-	-	-	-	-	-	-
2.3. Grants	19,934	20,145	21,267	22,380	23,474	24,535	25,681	27,886	30,229	32,720
Commuted pension	14,418	14,241	14,988	15,694	16,347	16,936	17,590	19,328	21,211	23,248
Old-age	13,997	13,785	14,494	15,158	15,763	16,300	16,899	18,577	20,396	22,365
Public	2,005	2,054	2,182	2,307	2,427	2,541	2,654	2,840	3,033	3'233
Private	11,992	11,731	12,312	12,851	13,336	13,759	14,245	15,737	17,363	19,133
Invalidity	421	456	494	536	584	636	692	751	815	883
Public	72	77	81	86	91	97	102	108	114	120
Private	349	379	413	450	493	540	590	643	700	762
Inactive persons	-	-	-	-	-	-	-	-	-	-
Public	-	-	-	-	-	-	-	-	-	-
Private	-	-	-	-	-	-	-	-	-	-
Grant	5,516	5,904	6,279	6,685	7,127	7,599	8,091	8,558	9,019	9,471
Other	5,516	5,904	6,279	6,685	7,127	7,599	8,091	8,558	9,019	9,471
Public	1,638	1,695	1,781	1,872	1,964	2,058	2,152	2,269	2,389	2,512
Private	3,878	4,209	4,498	4,814	5,163	5,540	5,939	6,288	6,630	6,960
Inactive persons	0	0	0	0	0	0	0	0	0	0
Public	0	0	0	0	0	0	0	0	0	0
Private	0	0	0	0	0	0	0	0	0	0
2.4. Administrative cost	9,444	10,082	10,764	11,493	12,272	13,106	8,996	14,949	15,968	17,057
Provision for administrative expenses (%)	3	3	3	3	3	3	3	3	3	3
Balance without interest	-26,691	-26,373	-26,853	-27,179	-27,338	-27,260	-26,920	-27,483	-27,997	-28,483
3. Reserve at year-end	134,039	-171,314	-211,736	-255,368	-302,264	-352,412	-405,771	-463,503	525,867	593,162

Table 2.19. NSIF- Projected revenue and expenditure for status quo conditions (figures in SD Mn.) (Cont'd.)

Year	2045	2046	2047	2048	2049	2050	2051	2052
1. Revenue	104,765	109,892	115,319	120,899	126,791	133,014	139,578	146,494
Total insurable earnings	607,422	648,967	693,408	740,947	791,806	846,219	904,438	966,735
1.1. Contribution income	147,300	157,375	168,151	179,680	192,013	205,208	219,326	234,433
1.2. Investment income	-42,535	-47483	-52,832	-58,781	-65,222	-72,194	-79,748	-87,939
2. Expenditure	176,259	182,571	198,540	211,156	224,438	238,786	254,250	270,919
2.1. Benefits	158,037	163,102	177,737	188,927	200,683	213,399	227,117	241,917
2.2. Pensions	122,676	129,247	136,379	144,118	152,409	161,325	171,008	181,511
Old-age	93,494	98,643	104,294	110,481	117,142	124,348	132,227	140,828
Public	33,123	34,689	36,366	38,152	40,038	42,025	44,136	46,378
Private	60,371	63,954	67,927	72,329	77,104	82,323	88,090	94,450
Invalidity, norm	2,892	3,068	3,257	3,458	3,672	3,898	4,139	4,397
Public	995	1,037	1,082	1,130	1,180	1,233	1,288	1,347
Private	1,897	2,031	2,174	2,328	2,492	2,665	2,851	3,050
Supervisors	26,289	27,536	28,829	30,179	31,595	33,079	34,642	36,285
Public	10,910	11,289	11,673	12,064	12,462	12,870	13,289	13,721
Private	15,379	16,247	17,156	18,116	19,133	20,209	21,353	22,565
Inactive persons	-	-	-	-	-	-	-	-
Public	-	-	-	-	-	-	-	-
Private	-	-	-	-	-	-	-	-
2.3. Grants	35,361	33,855	41,358	44,809	48,274	52,074	56,109	60,406
Commuted pension	25,438	27,767	30,467	33,361	36,190	39,276	42,512	45,917
Old-age	24,482	26,736	29,357	32,169	34,914	37,912	41,057	44,368
Public	3,437	3,645	3,878	4,120	4,354	4,594	4,838	5,092
Private	21,045	23,090	25,479	28,049	30,560	33,319	36,219	39,277
Invalidity	955	1,031	1,110	1,192	1,276	1,364	1,454	1,549
Public	127	133	140	147	154	161	169	176
Private	828	898	970	1,045	1,122	1,202	1,286	1,373
Inactive persons	-	-	-	-	-	-	-	-
Public	-	-	-	-	-	-	-	-
Private	-	-	-	-	-	-	-	-
Grant	9,923	6,088	10,891	11,449	12,085	12,798	13,598	14,489
Other	9,923	6,088	10,891	11,449	12,085	12,798	13,598	14,489
Public	2,640	1,718	2,920	3,077	3,239	3,409	3,586	3,772
Private	7,283	4,370	7,971	8,371	8,846	9,390	10,012	10,716
Inactive persons	0	0	0	-	-	-	-	-
Public	0	0	0	-	-	-	-	-
Private	0	0	0	-	-	-	-	-
2.4. Administrative cost	18,223	19,469	20,802	22,228	23,754	25,387	27,133	29,002
Provision for administra-. tive expenses (%)	3	3	3	3	3	3	3	3
Balance without interest	-28,959	-25,196	-30,388	-31,476	-32,425	-88,578	-84,924	-36,486
3. Reserve at year-end	-665,728	-739,548	-823,983	-915,534	-1,014,558	-1,121,795	-1,238,026	-1,364,109

2.4.4.2. Estimated cost of revaluation of all current pensions

As noted, in the past only the level of the minimum pension was periodically revised. This was unfair on the elderly as the purchasing power of their pension was seriously eroded by inflation. With a view to granting a nominal redress to such pensioners the costs involved in increasing all pensions were examined on the basis of the breakdown of pensions-in-payment data, which was furnished by the NSIF. Only a very small number of pensioners was found to have drawn pensions above the present minimum level. The financial implications of revaluation of all current pensions – taking the year of awarding of the pension into account – were examined. However, in order to restrict the cost of such revaluation to an affordable amount, it was assumed that the pension amount would be increased by only 10 per cent per annum, which is a 10 per cent increase for each year between 2003 and the year of awarding the pension, even though the average rate of inflation in the past was much higher. This would mean that a pension awarded in year (2003-n) would increase by (n) (.10) and if the revalued pension amount is above the current minimum pension then the revalued amount should be paid; if otherwise, the current minimum pension amount should be paid.

If this method of revaluation is adopted, it is estimated that the annual pension bill would increase initially by about 10 Mn. SD. The ensuing increase in the required contribution rate is not significant (less than 0.05 per cent of IE). Hence, the current rate of contribution should be adequate to finance the scheme under the recommended SP system of financing with a period of equilibrium of 15 years.

2.4.4.3. Reduction factors and early retirees

When a person retires before reaching normal retirement age, contributions will have been paid for a shorter period, but pensions will be paid for a longer period. Hence, the pension amount determined according to the normal formula should be reduced in order to prevent an undue strain being caused on the Fund. A reduction at the rate of 5 per cent for each year that the actual retirement age falls below the normal retirement age is recommended.

2.4.5. Financial evaluation of the employment injury benefit (EIB) scheme

Details of claims/claimants, such as the age at which an accident occurred, gender, last insurable monthly earnings, and the degree of disability sustained in respect of different classes of benefits paid under this scheme were not available for the purpose of determining claim-incidence rates, average degree of disabilities, and so on. However, when comparing total benefits paid under this branch during the four years from 1997 to 2000, with the contribution income of the respective years, it is evident that claims paid form about 0.50 per cent of IE. Hence, it would appear that the portion of contributions (2 per cent) currently assigned to this branch is too high.

2.4.6. Sensitivity testing

The contribution rates determined on the basis of the actuarial study would be valid to the extent that the underlying assumptions are realized and the rates are sensitive in particular to the assumptions made with regard to future interest rates, salary escalation rates and rates of growth of the insured population.

In order to gauge the extent of the variation of contribution rates with the variation in assumed rates of interest and salary escalation, further projections were made assuming higher and lower gaps between interest and salary escalation rates for the status quo conditions – that is, for the scenario that the minimum pension only will be adjusted annually at 12.50 per cent, 10 per cent, 8 per cent, 6 per cent, 6 per cent, and 5 per cent per annum thereafter. The GAP rates for these variations for a period of 50 years were compared with the required GAP rate of 26.25 per cent for the status quo conditions in order to gauge the effect of the variations. A summary of the results is given below.

- Higher gap: If future interest rates are assumed to be 1 per cent more, GAP rate for 50 years decreases to 25.43 per cent.

- Lower gap: If future interest rates are assumed to be 1 per cent lower, GAP rate for 50 years increases to 26.98 per cent.

The above results illustrate that when the difference between interest and salary escalation rates is higher, resulting contribution rates are lower and vice-versa.

2.5. Required financing levels according to existing provisions

- *Funding rule*: It is recommended that the LTBB of the scheme be financed under the partial funding system of financing known as the SP system so that the reserves do not decrease for 15 years. The estimated contribution rate (see section 2.8.2) should be adequate to finance the scheme under this partial funding system over the period of equilibrium of 15 years provided the actual experience of the scheme is the same or more favourable than the assumptions made in the actuarial study and an upward revision of the contribution rate could be done (as required under this system of financing) at the end of 15 years. If an unfavourable experience is recorded, it may become necessary to revise the contribution rate much earlier.

For financing the EIB, it is recommended that the System of Assessment of Constituent Capitals be adopted.

The projected pay-as-you-go (PAYG) rate is 23.79 per cent in the year 2003 but thereafter fluctuates between 17.81 per cent and 34.33 per cent and is 28.02 per cent in the year 2052.

The GAP rate for 50 years is 26.25 per cent.

The SP rate for a period of equilibrium of 20 years is 20.18 per cent.

The SP rate for a period of equilibrium of 15 years is 17.21 per cent.

A comparison of the results of the projections for alternative scenarios, with the corresponding figures of the results of the projection for status quo conditions, is made below.

Scenario 2 assumes that all pensions are increased annually at the rate of 12.50 per cent, 10 per cent, 8 per cent, 6 per cent, 6 per cent, and 5 per cent per annum thereafter.

The results of the projections relating to this scenario are as follows:

- The GAP rate for 50 years would be 31.59 per cent (26.25 per cent).

- The required SP rate for a period of equilibrium of 15 years = 19.83 per cent (17.21 per cent).

- The required SP rate for a period of equilibrium of 20 years = 23.07 per cent (20.18 per cent).

It is thus evident that revaluation of all pensions would increase the costs in the long term by about 5 percentage points.

Scenario 3 assumes that the contribution base is increased by 30 per cent for public-sector employees and 20 per cent for private-sector employees, and all pensions will be increased annually at 12.50 per cent, 10 per cent, 8 per cent, 6 per cent, 6 per cent, and 5 per cent per annum thereafter.

The results of the projections relating to this scenario are as follows and also presented in Table 2.20.

- The required GAP rate for 50 years = 30.56 per cent (26.25 per cent);
- The required SP rate for a period of equilibrium of 15 years = 20.29 per cent (17.21 per cent);
- The required SP rate for a period of equilibrium of 20 years = 23.40 per cent (20.18 per cent).

Table 2.20 Assumption of contribution base and projection results

	Status quo conditions (as a percentage)		
	Scenario 1	**Scenario 2**	**Scenario 3**
GAP rate for 50 years	26.25	31.59	30.56
SP for 20 years	20.18	23.07	23.40
SP for 15 years	17.21	19.83	20.29

When the results of Scenario 3 are compared with the results of Scenario 2 (where all pensions are assumed to be revalued annually), it is evident that in the long run the cost of financing the benefits would be slightly lower when the contribution base is widened even if there is no adjustment to the pension formula (see section 2.5.1), which is considered to be necessary to maintain equity.

2.5.1. Adjustments required when the contribution base is widened

If and when the contribution base of the membership (that is, either or both the public-sector and private-sector employees) is enlarged by inclusion of other allowances (a change in the definition of IE), it would be necessary to amend the pension formula for the following reasons:

- henceforth the pension amount would be calculated on the enhanced IE of those members,
- but the previous contributions have been made on lower levels of earnings. The following simple formula is recommended for this purpose:
    - If the average level of IE of the concerned category of employees increases to “k” times the old average level as a result of the revision of the definition of IE by inclusion of new allowances, and so on, then the pension formula should be adjusted as follows when the pension amounts and other benefits payable are based on the new IE:

- N = number of months of contributions received before the change.
- M = number of months of contributions received on the enhanced earnings base.
- Then the number of months that should be taken into account for computation of the benefit amount = (M + N/K).

The above simple formula has been suggested bearing in mind the need to keep the administration of benefit calculations as simple as possible.

The results of the projections indicate that contributions rates required to finance the benefits payable on behalf of public-sector employees are higher than the rates of contributions required to finance benefits payable on behalf of employees in the private sector. The following table illustrates this feature.

Table 2.21 Required rates of contributions as a percentage of IE of the respective sectors

	Public-sector	Private-sector	Combined
Scenario 1			
GAP	48.57	20.37	26.25
Scaled premium 15 years	36.74	11.82	17.21
Scaled premium 20 years	38.12	13.43	20.18
Scenario 2			
GAP	51.25	26.12	31.59
Scaled premium 15 years	42.85	14.03	19.83
Scaled premium 20 years	43.80	15.79	23.07

It would therefore follow that the financial position of the NSIF would improve if public-sector employees were not in the NSIF.

If all public-sector employees were to be transferred to the PSPF with effect from 1 January 2003, it has been estimated that as per the factors given in Table 2.15 (see section 2.4.3.9.), the NSIF would be required to pay 29,793 million SD to the PSPF as transfer values.

2.6. Review of investments

2.6.1 Investment activities

The NSIF is presently engaged in large-scale property development and trading activities. Both these endeavours are considered inherently risky and not recommended for a social insurance fund such as the NSIF. Its attention could be diverted from its primary responsibility of providing social security benefits to eligible employees in the country.

Investment of social security funds should be done in accordance with four basic principles, namely security, yield, liquidity, and social and economic utility. The investment policy appropriate to a social insurance fund will be examined in detail in section 5.7 but attention is drawn here to the following two important factors:

- **Risky investments:** It is not prudent for the NSIF (as presently constituted) to invest a very high percentage of funds in property/property development, nor to venture into trading activities, both of which endeavours by their nature are risky and require a high level of business acumen. Advancing money for activities such as secured loans may be considered but should only be done within defined limits, say, in total, less than 5 per cent of the Fund. Even though at present suitable avenues of investment available in the country are very limited, members' contributions in a social insurance fund should not be invested in risky ventures even if the return is expected to be high.

- **Investment committee and professional fund managers:** The services of professional fund managers may be obtained to handle the portfolio under the guidance and supervision of an investment committee of about seven members, the makeup of which would include a professionally qualified accountant, a professional banker, a representative from the central bank, and a senior representative from the Ministry of Finance. The committee members should be familiar with the country's capital market and its operations.

2.7. Review of general accounting and financial management

The annual accounts have been prepared and audited. The following shortcomings were evident:

- there has been no separation of either accounts or reserves relating to the two benefit branches, namely the Pensions branch and the EIBB. Hence, monitoring of performance is difficult and unclear;

- there is an inordinate delay in finalizing accounts;

- audited accounts were available only up to end of the year 2000;

- details of investment activities are not readily available or have not been comprehensively documented; they are said to be incomplete and 'shrouded in secrecy'. These factors have led to questions relating to the transparency of investment activities;

- no analysis of administrative expenses appears to have been done, which would have reduced or contained unwarranted items;

- Fund member records are incomplete and have not been updated for four years, which inhibits conducting proper actuarial and other studies;

- NSIF provides social assistance to certain categories of members/their dependents but there is no actual provision in the *Act* for such activity;

- Delay in preparing and maintaining comprehensive accounts, especially of investments, has created a poor public perception of the scheme.

2.8. Summary of problems/irregularities and recommendations for NSIF

2.8.1. Evident shortcomings of the Scheme

- **The records maintained by the NSIF were found to be incomplete** — The computerized records of many members did not include their age and/or gender, and member contribution files had not been updated since 31 December 1998. The data furnished by the NSIF to conduct the valuation had many deficiencies. Data samples have been adjusted therefore on the basis of certain assumptions and later smoothed out in order to calculate the database for this valuation. In order to obtain reliable results from an actuarial valuation, it is necessary for data to be current, correct and accurate.

- **There has been no separation of the reserves and the accounts between the pension and the EIB branches** — All contributions, investment income, benefit payments and other expenses have been credited and debited to one fund, known as the Fund of the NSIF. Maintenance of separate accounts and reserves in respect of each branch is necessary in order to have transparency and proper monitoring of operations.

- **Administrative expenditure incurred in operating the scheme is very high** — When expressed as a ratio of total income of the NSIF, it was 35.95 per cent in the year 2000, the most recent year for which audited accounts were available. According to the *NSIF Act*, only 10 per cent of total income should be utilized to meet administrative expenses.

- **The rates of return on the reserves are low when compared to inflation rates** — The average rate of return on nominal reserves in the year 2000 was 2.13 per cent and the rate of return on fixed assets and investments was 2.91 per cent, whereas the official inflation rate was 8.5 per cent. The low rate of return is attributed to large-scale investments in property where the gestation period (for a return) is very long.

- **The number of active private-sector members is relatively low** when compared to the probable number of employees in the country who are eligible for registration under the relevant *Act*.

- **The IE of the scheme (contribution base) is relatively low** — The monthly contributions are based on monthly basic salaries plus the cost-of-living and nature-of-work allowances of members. It is understood that other allowances, which are not taken into account for the purpose of paying contributions, form a very high percentage of the total earnings of a member especially of one in the public sector. Consequently, the level of the current minimum pension is high when compared with current average IE of public-sector employees who are members of the NSIF.

- **There is no regular revaluation of pensions-in-payment** — In the past only the minimum pension was adjusted and only at irregular intervals. Consequently, almost all the pensions have now converged to the minimum level and the purchasing power of the other pensions have been severely eroded due to inflation. Furthermore, the Government fixes arbitrarily the rate of revaluation of the minimum pension without considering the rate of development of IE of the scheme. This has caused a big strain on the Fund. The adjustment of the pensions to the level of the minimum pension has caused certain anomalies when one-third of the pension has been commuted.

- **The delay in payment of contributions in respect of employees in the public sector** — It is reported that contributions due from the Federal Government are often in arrears. At he end of 2002, contributions in arrears are said to be 4.5 billion SD. Consequently, the Fund has lost a substantial amount of money in investment income.

2.8.2. Recommendations

- **Update the contribution and other records of the members** — A special task force should be appointed to update the contribution records of the members as soon as possible. It is advisable to simultaneously conduct a file audit with appropriate edit checks in order to clean existing records.

- **Financial autonomy** — Maintain the financial autonomy of each benefit branch (Pensions and EIB). To accomplish this, it will be necessary to create separate reserves and to maintain separate accounts of income and expenditure for each benefit branch.

  A technical reserve and a separate income and expenditure account should be established for the EIB branch as explained below.

- **Financial systems** — Recommend a partial funding financing system known as the SP financial system for the Pensions branch and the System of the Assessment of Constituent Capitals for the EIBB for financing of the two types of benefits.

- **The required contribution rates** — The present contribution rate of 23 per cent (for the Pensions branch), which was recommended at the last valuation conducted as at 30 June 1994, has been determined under the fully-funded system of financing. However, it would appear that no explicit provision had been made for revaluation of pensions when recommending this rate of contribution. According to the results of the current valuation, the level rate of net contribution required to meet expected benefit payments during the next 50 years – assuming that only the minimum pensions will be revalued at the rates of increases, that is, 12.5 per cent, 10 per cent, 8 per cent, 6 per cent, 6 per cent and 5 per cent thereafter – is 26.25 per cent of IE. This is the required net GAP rate of contributions for a period of 50 years. Hence, it would follow that with the assumed provision for administrative expenses – equal to 8 per cent of IE in the year 2003 and gradually reducing to 3 per cent of IE after five years, the previously recommended rate of contribution (23 per cent) – is inadequate to finance the benefits of the pension scheme for 50 years, if the minimum pensions are revalued at the aforementioned assumed rates.

  Under the recommended partial-funding system of financing, the required net SP rate for a period of equilibrium of 20 years (with the same assumptions as above for revaluation of minimum pensions) is 20.18 per cent of IE and for a period of equilibrium of 15 years the required net SP rate is 17.21 per cent of IE.

  Hence, with the assumed provision for expenses of 3 per cent of IE after 5 years (as against the experienced 9.28 per cent in the year 2000), the required GCR would be 23.18 per cent for a period of equilibrium of 20 years and 20.21 per cent for a period of equilibrium of 15 years. Hence, under the partial funding SP system of financing, the current contribution rate would be adequate to finance the Scheme for 15 or even 20 years if only the minimum pensions are assumed to be revalued in future at the rates mentioned above provided the other underlying actuarial assumptions are realized.

- **Basis of revaluation of pensions** — Adjustment of the minimum pension at arbitrary rates as at present is not appropriate and cessation of this practice is recommended. The rate of revaluation should depend on the rate of return on reserves of the Pensions branch and the rate of increase of average IE in the previous year.

  For the sake of equity, all the current pensions-in-payment should be revalued by applying appropriate revaluation factors, which are linked to the "year of awarding" and the initial amount of the pension. A recommended basis of revaluation and the estimated costs are given in section 2.4.4.2.

  All pensions should be adjusted annually in future, at the beginning of either each calendar year or each financial year provided that, in the previous financial year, the average rate of return on the reserves exceeded the average rate of increase of IE of the members of the scheme. It is recommended that even if this condition is satisfied, until the next actuarial valuation is based on updated data, and so on, the revaluation should be based on 80 per cent of the rate of increase of average IE. This percentage may be reviewed after the next valuation is completed.

- **Contribution rate required in the future, if revaluation of all pensions were required** — If all pensions are assumed to be revalued in the future at rates mentioned in section 2.4.4.2 (that is, at the same rates at which the minimum pension is assumed to be revalued), then the required SP rate for a period of equilibrium of 20 years would be 23.07 per cent of IE, but for a period of equilibrium of 15 years the required rate is 19.83 per cent. To these net rates the recommended provision of 3 per cent of IE (after five years) should be added to arrive at the required GCRs.

  The share of the current contribution rate available for financing the Pensions branch is only 24.25 per cent of IE if as per the recommendations given below, 0.75 per cent of IE is set aside to finance the EIB.

  Hence, it would follow that the present contribution rate is adequate to finance the pension scheme on this basis under the SP system of financing for 15 years as the estimated required gross rate is less than 24.25 per cent of IE. However, it should be noted that revision of the contribution rate before expiry of 15 years may become necessary if the future experience of the Fund with regard to return on investments, IE escalation rates, administrative expenses and so on are different to the assumptions made in the valuation.

- **Widen the contribution base** — Inclusion of all or some of the other allowances in the definition of IE is recommended so as to increase the IE on which contributions are levied and pensions are calculated. The financial position of the pension scheme would thereby improve. Section 2.5.1 identifies the necessary adjustments in the pension formula.

- **Reduce the level of administration expenses** — Appropriate action should be taken to control and reduce administration expenses so that they will be within the lower of 10 per cent of the total income of the Fund or 3 per cent of IE. (It is observed that during the projection period, the average 3 per cent of IE is not significantly different from 10 per cent of total income, which is the upper limit for administration expenses stipulated in the *Act*).

- **Increase the rate of return on assets of the Fund** — Appropriate action should be taken to judiciously invest reserves with a view to obtaining a rate of return on reserves, which would exceed average rate of increase of IE by at least 2 percentage points.

- **Adopt revised commutation factors** — The commutation factors have been revised on the basis of actuarial assumptions made in this valuation. Restoration of the commuted portion of the pension on the death of the member or after the lapse of a stipulated period is not recommended. The recommended new commutation factors are given in Annex G.

- **New qualifying conditions** — Change the minimum qualifying condition for pension entitlement to 180 months of contributions from the present minimum condition of 144 months, which is too generous for a social insurance pension scheme like the NSIF. Raising the minimum requirement to 180 months would lower the overall cost of paying pensions.

- **Raise retirement ages** — Raise the normal retirement age of females to 60 years, and the minimum age of early retirement with a reduced pension to 50 years in view of the relatively long period of life expectancy at age 60 of insured members. The reduction factors that need to be used when paying pensions to early retirees are given in Section 2.4.4.3. The recommended measures would not only be equitable but would also reduce the over-all cost.

- **Change the definition of the pensionable salary** — Base the pension amounts on the average of the last 36 months of IE instead of the average of the last 12 months IE. This measure would help to minimize the risk of enhancing the pension entitlement by manipulation of IE.

- **Contribution required to finance employment-injury benefits (EIB)** — The contribution rate of 2 per cent of IE currently assigned for provision of EIB is too high when compared with past claims' experience. It is recommended that only 0.75 per cent of IE be allocated to this branch of benefits.

- **Table for calculation of capital values/Technical reserves for the EIB branch** — Under the EIB Scheme, reserves need to be created by calculating the capital values of pensions-in-payment and that of future new pensions using the table of factors given in Annex H. Establish the technical reserves as explained hereunder.

  The initial amount of the technical reserve should be equal to the capital value of the present pensions-in-payment as per the table in Annex H. Every year calculate the capital values of new pensions awarded during the year using the same table and increase the technical reserve with the amount of the capital value, and debit the technical reserve with the amount of monthly pensions paid during the year. The income account of this branch will include contributions and investment income attributable to it. The expenditure account should carry the capital value of new pensions and administrative expenses attributable to this branch.

- **Transfer all public-sector employees to the PSPF** — Consider the feasibility of transferring all public-sector employees to the PSPF if the NSIF and the PSPF are to continue as separate funds. It is evident from the results of the actuarial projections given in section 2.5.1 that the required contribution rates for private-sector employees are lower than the contribution rates required in respect of the public-sector employees. Hence, the financial position of the NSIF would improve if public-sector employees were transferred to the PSPF.

- **Collect contributions in arrears** — Ensure that all contributions in arrears are collected as soon as possible and interest is charged on delayed payments.

- **Improve the image of the NSIF** — Embark on a publicity/education campaign to improve the public perception of the NSIF and to increase registration from the private sector. It is important to demonstrate to insured members that overall service in the NSIF has improved – in particular, by taking necessary actions to minimize the delay in settlement of claims – and show improved performance with regard to investment of funds.

3. Review of the Public Service Pensions Fund according to existing provisions

3.1. Legislative review

The *Public Service Pensions Act 1992* was enacted on 7 October 1992 so as to establish an independent legal fund known as the Public Service Pensions Fund (PSPF), which would replace the Department of Pensions and provide pension and other benefits to public-sector employees. The actual establishment of the Fund, however, only took effect from 1 July 1994 after an actuarial study was completed to estimate the present value of liabilities accrued and that will accrue in future in respect of services rendered up to 1 July 1994 by ex- and current members as at that date. The Government then decided that total liabilities in respect of pensioners and the share of liabilities accruing in respect of active members in service (and accruing to their survivors) – both items as at 1 July 1994 – for services up to that date, would be met by the Government. According to an agreement reached between the Fund and the Ministry of Finance, the Government agreed to provide annually a sum of money which would not be less than the amount that it would have had to pay had the Fund not been established.

Since then the Government has been paying to the Fund special contributions in addition to normal contributions equivalent to 17 per cent of insurable earnings (IE) of public servants who are members of this Fund. These employees pay 8 per cent of their IE to the Fund.

The Fund provides old-age, invalidity and survivors' benefits (PSB), certain other special benefits (such as enhanced and special pensions and end-of-service gratuities) and employment injury benefits (EIB). However, there has been no separation of accounts or reserves between the two main benefit branches, the PSB and the EIB.

Out of total joint contributions amounting to 25 per cent of IE, 23 per cent is meant for the financing of the pension scheme and special benefits and 2 per cent is meant for the financing of the EIB scheme.

3.2. Institutional and administrative review

The *Public Service Pension Fund (PSPF)* administration, like the NSIF, is structured on a two-tiered basis — the headquarters at the national level and the service-delivery offices at the local (or state) level. There are 19 service-delivery offices situated in 19 of 26 states; some southern states have no PSPF office due to the war.

Like the NSIF, the main functions and responsibilities of the PSPF are typical of a social insurance institution:

- registration of eligible public-sector employers;
- monthly collection and recording of employer contributions;
- acceptance, processing and payment of claims for pensions and other benefits;
- financial management of all investments, income and expenditure of the pension fund,
- provision of reports on the activities of the PSPF.

The Director General of the PSPF, who reports to the Board of Directors, is responsible for the administration and day-to-day operations of the PSPF. The PSPF is divided into five

Directorates, and six separate departments. Details of the activities of these directorates and units are given in Annex A2.

3.2.1. Evident shortcomings

The most significant and major financial problem for the PSPF is the inability of public-sector employers (government ministries at all levels and public enterprises) to meet fully their contribution liability on time. This problem is linked to non-payment by the Government of arrears owed in respect of previous contribution periods rather than from non-payment of its current monthly contribution liabilities. In general, public enterprise organizations pay contributions on time.

As for the NSIF, there is a significant duplication of work at national and local levels, particularly with contributions, claims processing and auditing. This again stems from the lack of an adequate computer network to provide online access to national database records in Khartoum. A new system is being planned.

The IT unit maintains the pensioners database system, and is responsible for data entry and the application of monthly pension change data, and the production of monthly pension payment lists for use by banks and cashiers of local offices.

There is currently no long-term system available for the recording of details of active individual contributors, for whom up until recently the PSPF did not keep records, and with whom the first contact occurs at the time contributors made application for their pension. The absence of employee records prevented the PSPF from applying any accurate control mechanism to confirm the amount of monthly contribution liability of each public-sector organization.

To some extent these problems are being addressed with the commencement of data collection from individual public-sector worker records, but this is seen as an interim system solution to address immediate financial and actuarial projection needs. A long-term solution for the recording of individual employee records needs to be developed and implemented.

A piecemeal approach appears to have been taken to the introduction of computer systems for the PSPF, with a number of stand-alone systems being introduced as hardware has become available. There is a need for an overall PSPF strategic plan for computerization to be developed, at the very least, over the next five-year period.

Other problems reported at the operational level include:

- shortage of staff numbers compared to work volumes;
- new functions and responsibilities introduced in offices without any additional staff provided to cope with additional workloads;
- difficulties in finding experienced staff available for transfer to local offices (the majority of staff at the central level are women who are not expected to move away from families, and so on);
- lack of qualified staff (accountants, auditors, cashiers, etc.) leading to accountability problems (e.g., incorrect procedures followed for petty cash accounts, reimbursements, and so on, through lack of knowledge and experience);
- constant need for training,

- lack of transport facilities to enable staff to perform their duties – the decentralized offices cover wide areas across the states – the clients (pensioners and employers) are spread across the country, and access is difficult.

As noted, it is planned that a communications network will be introduced to provide online access to a national database system for use at both national and state levels. A new computer system allowing for online access to such a database has been developed and computers acquired but network facilities have yet to be installed. Seven state offices will be given online access in the near future, with remaining offices connected in the next financial year.

These IT facilities will have a significant effect on how work is processed at all levels and, as with the NSIF, will require a major review of all operational procedures. This should also result in a complete review of the organizational structure of the PSPF, as responsibilities and workloads will change as a result of the introduction of the new system.

3.3. Financial review of past performance

A summary of a Statistical analysis of the performance of the PSPF is given in Table 1.2 (see section 1.3.2.4.) and summarized versions of the financial statements are given in Tables 3.1 and 3.2.

A major shortcoming of the Scheme is that while benefits provided are very generous, the financing of them – as with the NSIF – is done with contributions based on IE, which are low compared to the actual earnings of members. The contributions to the PSPF are based on an insured salary, which consists of the basic salary of an employee and a few other allowances, which constitute a very high percentage of an employee’s total earnings.

On the other hand, the Government revises the level of the minimum and other pensions whenever basic salaries of employees are being revised. Consequently, the present average pension of the PSPF represents a very high percentage of average IE of members though it may not represent a high percentage of their gross earnings.

3.3.1. Demographic developments

As the PSPF did not have a comprehensive database, it was not possible to comment on the growth of the membership. According to PSPF senior officials, the rate of growth has been low as government recruitment in the recent past has been low, and privatization of a number of government-owned establishments has lead to a reduction in the membership of this sector. The total membership of the PSPF drawing pension benefits is estimated to include 350,000 active members and about 120,000 beneficiaries.

3.3.2. Income and expenditure

Tables 3.1 and 3.2 show the income and expenditure and the evolution of the reserves for each of the financial years ending on 31 December 1999, 2000, 2001 and 2002. During this period of four years, nominal reserves increased at an average rate of 29.66 per cent per annum and the contribution income recorded a growth rate of 59.14 per cent per annum.

Table 3.1: PSPF – Income and expenditure statement (in SD '000)

Income	1999	2000	2001	2002
Income from normal contributions	1,591,319	2,653,346	3,343,994	6,401,056
Ministry of Finance - Special contributions	6,388,653	9,574,928	5,714,712	8,251,316
Income from investments	1,371,564	618,370	404,618	2,359,218
Other income	107,620	229,856	169,785	294,684
Total income	9,459,156	13,076,500	9,633,109	17,306,274
Expenditure (less)				
Pensions and lump-sum benefits	4,145,747	5,539,982	5,459,082	9,084,658
Pensioners social fund	-	-	103,384	153,012
Salaries and wages	321,573	387,373	427,822	504,776
General expenditure	306,496	505,836	520,370	173,784
Total expenditure	4,773,816	6,433,191	6,510,628	9,916,230
Surplus	4,685,340	6,643,309	3,416,181	7,390,044

Table 3.2: PSPF – Balance sheets (in SD '000)

Assets	1998	1999	2000	2001	2002
Fixed assets (land, building)	896,254	962,248	983,060	1,139,374	1,202,865
Long-term investments	641,385	1,748,658	3,696,805	3,696,805	5,016,805
Inter-branches account	-	(636,926)	(103,900)	107,024	-
Current assets					
Cash at banks and post office	1,189,118	2,372,244	4,438,009	1,262,836	1,781,601
Short-term investments	2,891,347	9,774,232	12,303,745	18,720,707	23,748,801
Debtors	1,120,058	1,177,088	1,742,355	1,204,467	1,863,706
Total assets:	6,738162	15,397,544	23,060,074	26,131,213	33,613,718
Liabilities					
Creditors	508,172	536,378	1,464,845	1,299,803	1,382,324
Capital and reserves	1,264,924	1,264,924	1,264,924	1,264,924	1,264,924
Surplus	4,965,066	13,596,242	20,330,305	23,566,486	30,966,530
Total liabilities:	6,738,162	15,397,544	23,060,074	26,131,213	33,613,718

3.3.3. Benefit levels

Since pensions are computed on pensionable salaries (comprised of the basic salary plus cost-of-living and housing allowances), which represent a relatively low percentage of the gross earnings of an insured person, the average pension of a person (with even the full pension entitlement of five-sixth of the final pensionable salary) does not reflect the actual earnings prior to retirement. The average pension payable to current pensioners amounts to

5300 SD, whereas the minimum pension as at 31 December 2002 was 4,800 SD. Since all pensions are revalued at the discretion of the Government, the average pension in the PSPF, unlike in the NSIF, is more than the minimum pension. It should be noted that the pension payable is only two-thirds of the actual pension amount, due to commutation of one-third of the pension and to some extent this situation has distorted the picture depicted by the above figures.

3.3.4. Investments

3.3.4.1. Return on the Fund

During the four years under consideration (1999 to 2002), the average rate of return on nominal reserves had been 13.21 per cent, 3.27 per cent, 1.66 per cent and 8.22 per cent per annum. The rates of return were lower than the rates of inflation that prevailed. The low rates of return on investments of the fund were attributed to large-scale investments in property/property development on which the gestation period is relatively long.

3.3.4.2 Type of investments held

From the information furnished by the PSPF, it would appear that the main investments of the Fund as at 31 December 2002 included properties, investment in commercial trading, bank deposits, shares and profit-sharing investments in business. The amounts of the Fund (in millions of SD) invested in these areas as at 31 December 2002 are as follows.

- Trading 12,262, properties 8294, companies 4159, shares and bonds 5091, bank deposits 819.

3.3.5. Administrative expenses

For the financial year ended 31 December 2002, administrative expenditure was 12.97 per cent of contribution income (that is, around 3.25 per cent of IE). The level of administrative expenses was relatively low (compared to the level experienced by the NSIF) as the collection of contributions from government departments was less complicated and less time- and money-consuming than collecting contributions from the private sector. However, there is room for a reduction of administrative expenses by computerizing some operations, which presently are done manually.

3.4. Demographic and financial projections according to existing provisions

3.4.1. Methodology

The following paragraphs describe the methodology adopted for the actuarial evaluation of the LTBB of the PSPF and it includes old-age, invalidity and survivors' benefits and other end-of-service benefits.

Even though the PSPF provides a range of benefits, the future benefit expenditure and income of the scheme have been estimated by using the projection method. The primary objectives of the actuarial valuation were to estimate the:

- present value of liabilities vesting on the Government and the rate of contribution required to meet this liability, and

- rate of contribution required to meet the liabilities vesting on the PSPF.

As with the NSIF, the assessment of future pension scheme benefits and contributions was done by means of actuarial projections and, where based on certain economic and demographic assumptions, the operation of the scheme was simulated on a year-by-year basis by making use of the computer-based *ILO Pension Model* but with certain modifications. In addition to normal demographic and financial projections, the present value of the government's share of liabilities was estimated as follows.

The benefit amounts that fall due each year were divided into two groups in proportion to the periods of service rendered by memberS (active, disabled or deceased) up to 1 July 1994, and thereafter up to the date of retirement, disability or death as the case may be. Then, the present value of that portion of the liabilities corresponding to the periods of service up to 1 July 1994, were determined by applying assumed discount rates. The sum total of such liabilities was assumed to be the present value of government liability as per the commitment made at the inception of the PSPF.

A description of the projection methodology adopted is given in Annex F.

3.4.2. Database as of the valuation date

3.4.2.1. Initial insured population

The PSPF did not have records for all active members of the Fund. The basic information necessary for an actuarial study, such as age, date of joining service and monthly-pensionable salary were available only in respect of two samples — 94,438 and 55,982, respectively — for members who had joined service before 1 July 1994.

Even in these two samples there were several entries with inconsistent periods of past service, etc. Furthermore, the PSPF was unable to give the gender of each member in the samples.

PSPF senior officials considered that 40 per cent of active members would be females and that the males and females would have similar distributions with regard to age-wise average salaries and average periods of past service.

The argument used in support of this assumption was that in the public service, irrespective of gender, all employees in a grade draw identical salaries and allowances.

PSPF senior management estimated that the total number of active members would be about 360,000, out of which about 80,000 were assumed to have joined after 1 July 1994. These figures have been used in this valuation and the total-assumed membership has been divided according to gender using the ratios of males to females given by the PSPF. It has been further assumed that the whole membership will have the same distributions as those in the sample, with regard to age, average period of past service and average monthly salary. The assumed age/gender-wise distribution of initial insured populations is given in Table 3.3 (those who had entered after 1 July 1994) and in Table 3.4 (those who had entered before 1 July 1994).

It is emphasized that certain adjustments had to be made to the data received when creating the database for the valuation as several inconsistencies were observed with regard to the ages/periods of past service of members in the samples.

Table 3.3: PSPF liability – Summary of active members (entry after 1 July 1994)

Age	Male			Female		
	No.	Service until: 2002	Total monthly salary	No.	Service until: 2002	Total monthly salary
18	2	2	16,701	1	1	11,134
19	7	12	89,321	5	8	59,547
20	15	22	162,241	10	15	108,160
21	45	96	378,835	30	64	252,557
22	94	201	773,487	63	134	515,658
23	221	525	1,656,580	147	350	1,104,387
24	434	1,161	3,481,028	289	774	2,320,685
25	557	1,710	4,477,894	372	1,140	2,985,262
26	917	3,459	7,389,104	612	2,306	4,926,069
27	1,488	6,417	12,289,862	992	4,278	8,193,242
28	2,418	10,927	20,356,352	1,612	7,285	13,570,902
29	2,992	13,780	26,103,172	1,995	9,187	17,402,115
30	3,488	16,548	31,423,632	2,325	11,032	20,949,088
31	4,196	21,688	38,348,622	2,795	14,458	25,565,748
32	3,822	20,163	35,727,466	2,548	13,442	23,818,311
33	4,095	22,927	39,145,575	2,730	15,285	26,097,050
34	3,882	22,197	37,237,810	2,588	14,798	24,825,207
35	3,078	18,270	29,467,505	2,052	12,180	19,645,004
36	2,433	14,816	23,094,693	1,622	9,877	15,396,462
37	1,886	11,484	18,078,025	1,258	7,656	12,052,017
38	1,670	10,344	15,756,523	1,114	6,896	10,504,349
39	1,252	7,581	11,742,792	835	5,054	7,828,528
40	1,682	9,967	16,259,332	1,122	6,644	10,839,555
41	1,379	8,245	13,367,126	919	5,497	8,911,418
42	876	5,134	8,457,252	584	3,423	5,638,168
43	916	5,186	8,732,315	610	3,457	5,821,543
44	722	3,874	7,299,937	481	2,583	4,866,625
45	633	3,248	6,314,964	422	2,165	4,209,976
46	513	2,459	5,192,217	342	1,639	3,461,478
47	367	1,859	3,549,591	245	1,239	2,366,394
48	276	1,284	2,761,380	184	856	1,840,920
49	235	1,130	2,470,159	157	753	1,646,773
50	237	1,132	2,445,018	158	755	1,630,012
51	226	1,091	2,284,806	151	727	1,523,204
52	139	722	1,479,359	93	481	986,239
53	252	1,271	2,552,320	168	847	1,701,547
54	161	813	1,681,802	107	542	1,121,202
55	197	1,015	2,019,292	131	677	1,346,195
56	197	993	2,027,958	131	662	1,351,972

Table 3.4: PSPF – Summary of active members (who entered before 1 July 1994) - Shared liability

Age	Male				Female			
	No.	Service until: 2002	Service until: 1994	Total monthly salary	No.	Service until: 2002	Service until: 1994	Total monthly salary
26	36	342	32	302,823	24	228	21	201,882
27	96	939	107	835,940	64	626	71	557,294
28	267	2,608	313	2,236,963	178	1,739	209	1,491,308
29	431	4,248	523	3,591,056	287	2,832	349	2,394,038
30	929	9,090	1,110	8,221,515	619	6,060	740	5,481,010
31	1,718	17,067	2,323	15,222,385	1,146	11,378	1,549	10,148,257
32	2,320	23,703	3,775	20,877,502	1,546	15,802	2,517	13,918,335
33	3,277	35,017	6,956	29,639,286	2,185	23,345	4,637	19,759,524
34	4,309	48,074	11,314	40,617,344	2,872	32,049	7,543	27,078,229
35	4,643	53,866	14,242	44,188,095	3,095	35,911	9,495	29,458,730
36	5,191	63,341	19,099	50,007,768	3,461	42,227	12,733	33,338,512
37	5,084	66,493	23,393	50,280,152	3,389	44,329	15,595	33,520,102
38	6,337	87,563	33,910	63,547,285	4,224	58,375	22,607	42,364,857
39	6,696	99,262	42,638	69,085,447	4,464	66,174	28,425	46,056,965
40	11,710	180,396	81,771	124,385,245	7,808	120,264	54,514	82,923,496
41	10,763	176,215	85,759	116,597,017	7,175	117,477	57,173	77,731,344
42	8,052	140,803	73,015	89,227,611	5,368	93,869	48,677	59,485,074
43	8,407	155,266	84,550	95,109,863	5,605	103,511	56,366	63,406,575
44	7,916	157,177	90,498	91,760,989	5,278	104,785	60,332	61,173,993
45	7,408	153,295	90,836	87,144,371	4,938	102,197	60,558	58,096,247
46	5,988	131,187	80,711	71,389,739	3,992	87,458	53,807	47,593,159
47	6,066	139,960	88,702	73,502,457	4,044	93,307	59,135	49,001,638
48	4,977	121,694	79,473	61,152,153	3,318	81,129	52,982	40,768,102
49	4,928	126,618	84,781	61,343,802	3,285	84,412	56,521	40,895,868
50	4,387	117,745	80,558	55,368,604	2,925	78,497	53,705	36,912,403
51	4,590	125,690	86,926	57,909,343	3,060	83,793	57,951	38,606,229
52	4,035	114,625	80,544	51,744,879	2,690	76,416	53,696	34,496,586
53	4,629	132,446	93,117	55,954,176	3,086	88,297	62,078	37,302,784
54	4,554	134,801	95,931	54,518,933	3,036	89,868	63,954	36,345,956
55	4,760	141,878	101,041	55,585,080	3,174	94,585	67,360	37,056,720
56	4,554	139,234	100,279	53,826,931	3,036	92,823	66,853	35,884,621
57	4,337	137,879	100,763	50,801,462	2,891	91,919	67,175	33,867,641
58	4,910	156,319	114,464	56,106,973	3,273	104,213	76,310	37,404,648
59	3,643	121,096	90,114	41,739,417	2,429	80,731	60,076	27,826,278
60	6,052	206,856	155,352	69,284,055	4,035	137,904	103,568	46,189,370

3.4.2.2. Pensioners

The individual pensioner data were available but the gender of each pensioner was not. Hence, the division of the data according to gender was done using the ratios given by PSPF senior management. The pensioners data used in the valuation are given in Tables 3.5 to 3.8. Here, also, certain inconsistencies were observed with regard to the ages of members and therefore certain adjustments were made in creating the database for the valuation.

Table 3.5: PSPF Shared liability – Summary of pensioners (Survivors of deceased members who had retired after 1 July 1994)

Age	Male		Female	
	No.	Monthly pension	No.	Monthly pension
35	18	76,161	5	19,040
36	18	87,110	5	21,777
37	17	79,669	4	19,917
38	24	110,766	6	27,692
39	27	124,311	7	31,078
40	52	228,715	13	57,179
41	45	199,043	11	49,761
42	37	189,082	9	47,271
43	51	227,191	13	56,798
44	59	285,356	15	71,339
45	47	229,059	12	57,265
46	47	232,931	12	58,233
47	55	278,348	14	69,587
48	49	261,504	12	65,376
49	45	231,167	11	57,792
50	47	233,215	12	58,304
51	67	370,644	17	92,661
52	47	275,972	12	68,993
53	77	418,024	19	104,506
54	87	545,961	22	136,490
55	86	539,053	21	134,763
56	85	514,114	21	128,529
57	89	527,170	22	131,792
58	116	691,755	28	172,939
59	96	614,304	24	153,576
60	91	553,507	23	138,377
61	86	499,272	21	124,818
62	77	476,769	19	119,192
63	121	685,292	30	171,323
64	101	545,588	25	136,397
65	122	627,867	31	156,967
66	86	420,798	21	105,200
67	72	358,485	18	89,621
68	142	687,144	36	171,786
69	6	36,033	1	9,008
70	2	12,161	1	3,040
71	3	16,664	1	4,166
72	2	16,052	1	4,013
74	4	21,917	1	5,479
75	2	12,536	1	3,134
76	2	12,793	1	3,198
77	2	11,930	1	2,983
79	2	11,930	1	2,983
82	1	4,421	0	1,105
83	2	11,226	0	2,807
87	1	5,583	0	1,396
93	1	4,457	0	1,114

Table 3.6: PSPF Shared liability – Summary of pensioners (Alive members who had retired after 1 July 1994)

Age	Male				Female			
	No.	Total service	Service until 1994	Total monthly pension	No.	Total service	Service until 1994	Total monthly pension
35	39	329	112	144,797	10	82	28	36,199
36	50	434	170	198,958	13	108	43	49,739
37	52	588	373	220,364	13	147	93	55,091
38	66	812	550	287,747	17	203	137	71,937
39	80	979	664	348,634	20	245	166	87,158
40	140	1,793	1,263	613,545	35	448	316	153,386
41	158	2,010	1,421	688,610	39	502	355	172,152
42	128	1,885	1,409	566,420	32	471	352	141,605
43	181	2,853	2,205	813,766	45	713	551	203,441
44	199	3,236	2,527	922,812	50	809	632	230,703
45	238	3,999	3,157	1,116,623	60	1,000	789	279,156
46	239	4,436	3,498	1,141,617	60	1,109	874	285,404
47	242	4,810	3,924	1,168,417	61	1,203	981	292,104
48	255	5,306	4,355	1,278,178	64	1,326	1,089	319,544
49	266	5,812	4,772	1,351,334	66	1,453	1,193	337,833
50	259	5,832	4,884	1,335,813	65	1,458	1,221	333,953
51	260	6,064	5,131	1,331,771	65	1,516	1,283	332,943
52	220	5,486	4,622	1,130,793	55	1,371	1,156	282,698
53	273	6,603	5,654	1,418,877	68	1,651	1,413	354,719
54	287	7,484	6,397	1,568,299	72	1,871	1,599	392,075
55	314	8,266	7,084	1,661,537	79	2,067	1,771	415,384
56	316	8,502	7,395	1,650,347	79	2,126	1,849	412,587
57	320	8,791	7,635	1,700,037	80	2,198	1,909	425,009
58	346	9,643	8,446	1,831,102	87	2,411	2,111	457,776
59	268	7,888	6,992	1,377,807	67	1,972	1,748	344,452
60	286	8,480	7,440	1,539,589	72	2,120	1,860	384,897
61	1,467	49,127	39,540	8,560,516	367	12,282	9,885	2,140,129
62	1,219	40,845	33,676	6,939,755	305	10,211	8,419	1,734,939
63	1,709	56,453	48,046	9,224,301	427	14,113	12,012	2,306,075
64	867	29,414	25,962	4,678,488	217	7,354	6,490	1,169,622
65	1,001	33,755	30,634	5,189,452	250	8,439	7,658	1,297,363
66	642	21,810	20,323	3,239,109	160	5,453	5,081	809,777
67	634	21,416	20,473	3,171,423	159	5,354	5,118	792,856
68	1,216	40,421	39,679	5,922,900	304	10,105	9,920	1,480,725
69	5	155	143	27,683	1	39	36	6,921
70	2	59	54	11,755	1	15	13	2,939
71	1	29	28	3,918	0	7	7	980
72	2	105	99	14,980	1	26	25	3,745
73	1	25	24	3,918	0	6	6	980
75	2	103	96	11,800	1	26	24	2,950
76	2	100	95	12,812	1	25	24	3,203
77	1	43	41	4,392	0	11	10	1,098
82	1	30	23	5,231	0	7	6	1,308
92	1	26	20	5,280	0	6	5	1,320
93	1	0	0	3,918	0	0	0	980
94	1	27	25	3,918	0	7	6	980

Table 3.7: PSPF – Summary of pensioners (Exceptional, retired before 1 July 1994, retired under *Decree 574*) Full liability on the Government

Age	Male		Female	
	Number	Monthly pension	Number	Monthly pension
35	74	351,603	24	113,859
36	99	472,086	32	152,000
37	157	748,517	50	238,809
38	202	983,956	64	311,893
39	296	1,452,887	95	462,441
40	540	2,654,651	172	845,337
41	574	2,842,377	182	904,285
42	518	2,552,132	165	813,825
43	653	3,290,897	206	1,042,019
44	781	3,942,832	243	1,234,379
45	821	4,217,542	259	1,335,421
46	798	4,148,726	253	1,320,436
47	867	4,546,368	273	1,437,773
48	859	4,537,372	271	1,434,919
49	917	4,895,412	288	1,545,975
50	910	4,897,525	285	1,542,704
51	1,036	5,628,984	323	1,765,012
52	944	5,170,363	299	1,643,754
53	1,152	6,288,215	361	1,984,449
54	1,183	6,530,637	375	2,079,717
55	1,369	7,555,764	432	2,401,240
56	1,399	7,743,574	443	2,468,289
57	1,491	8,261,685	472	2,632,006
58	1,685	9,302,398	530	2,946,169
59	1,315	7,328,036	414	2,320,454
60	1,468	8,135,579	458	2,560,067
61	1,510	8,370,202	469	2,622,830
62	1,344	7,985,675	421	2,525,139
63	2,155	12,393,675	675	3,918,367
64	1,922	11,301,775	611	3,618,463
65	2,027	11,624,775	641	3,708,944
66	1,979	11,294,474	632	3,630,326
67	1,818	10,474,997	581	3,366,558
68	2,057	11,533,565	641	3,625,717
69	2,467	13,272,488	724	3,939,167
70	2,423	12,920,783	703	3,793,699
71	2,341	12,339,572	679	3,623,008
72	1,500	8,037,876	441	2,388,168
73	2,195	11,438,059	628	3,305,001
74	1,161	6,169,457	339	1,820,544
75	1,214	6,378,453	357	1,891,091
76	1,021	5,342,371	304	1,602,992
77	753	3,961,115	226	1,200,380
78	781	4,032,765	232	1,203,914
79	623	3,286,893	190	1,010,376
80	418	2,172,097	128	668,877
81	441	2,302,299	131	691,964
82	291	1,494,578	88	457,018
83	328	1,653,194	97	488,949
84	184	977,134	56	301,941

Table 3.8: PSPF – Summary of survivors (Survivors of those who had received exceptional pensions, those who had retired before 1 July 1994, those who had retired under *Decree 574*) Full liability on the Government

Age	Male		Female	
	Number	Monthly pension	Number	Monthly pension
35	20	90,215	7	30,072
36	15	69,233	5	22,741
37	22	97,589	7	31,857
38	31	136,677	10	44,771
39	37	164,124	12	53,658
40	80	356,729	26	116,182
41	71	329,187	22	103,948
42	69	348,885	23	114,948
43	92	447,597	29	142,466
44	106	505,213	34	161,602
45	101	513,326	31	160,443
46	119	582,159	39	188,290
47	147	721,993	45	223,498
48	127	636,679	41	207,446
49	171	830,044	52	258,732
50	152	749,427	46	231,279
51	206	1,048,062	64	327,129
52	198	1,005,216	62	316,547
53	221	1,157,368	70	367,718
54	268	1,322,481	84	416,485
55	292	1,485,076	91	463,474
56	300	1,516,899	92	472,797
57	329	1,695,666	103	532,307
58	400	2,082,322	122	635,670
59	354	1,824,854	109	563,775
60	410	2,093,912	126	648,795
61	398	2,076,151	122	639,545
62	348	1,818,641	106	557,247
63	538	2,759,052	164	847,968
64	468	2,493,682	142	760,784
65	555	2,793,295	170	857,961
66	554	2,868,888	169	882,423
67	574	2,881,634	176	883,838
68	679	3,368,956	201	1,007,013
69	641	3,233,147	187	947,144
70	688	3,409,693	206	1,024,260
71	715	3,559,575	209	1,043,173
72	546	2,731,945	161	812,366
73	790	3,875,111	227	1,123,228
74	495	2,471,585	146	733,060
75	566	2,842,518	167	839,226
76	505	2,511,292	151	754,704
77	454	2,248,280	135	674,261
78	527	2,592,729	157	777,514
79	437	2,181,820	132	662,441
80	332	1,616,824	101	492,725
81	360	1,858,205	109	562,907
82	252	1,232,974	77	374,314
83	286	1,391,037	87	424,895
84	209	1,048,159	64	320,209
85	183	921,993	58	290,885

3.4.2.3. Insurable earnings

The IE used in the valuation are the age-wise IE of active members in the data samples given by the PSPF. The total age-wise monthly salaries used in the valuation are given in the Tables 3.3 and 34.

3.4.2.4. Density of contribution

This represents the average proportion of the year during which an active-insured person actually contributes to the scheme. This variable is applied to the annual rate of IE (12 times the monthly IE as presented in Tables 3.3 and 3.4) in order to determine the actual IE on which contributions in a year would be received, taking into account periods of absence of earnings during a given year. The density of contribution has been assumed to stay constant over the whole projection period.

The density of contributions assumed for this valuation are based on opinions expressed by PSPF senior officers, as detailed contribution records of individual members were not readily available to calculate the experienced densities. The assumed density of contributions is 95 per cent.

3.4.3. Demographic and economic assumptions

The assumptions used in the valuation are briefly described below and are given in Tables 3.9 and 3.10.

3.4.3.1. Mortality rates of insured persons

The mortality rates used in the projections are 80 per cent of the mortality rates in the UN population table for Sudan. The life expectancy at age 60 according to the adopted rates is 13.58 years for males and 13.92 years for females.

3.4.3.2. Invalidity rates

The rates adopted in the projections are based on the invalidity rates of the Italian experience and have been adjusted to reflect the experience of the scheme. The assumed invalidity rates are taken to be constant for the whole projection period and the assumed rates are the same as the rates used in the NSIF valuation-vide Table 3.11.

3.4.3.3. Other decrement rates

The other decrement rates assumed for the projections are the same as those used for the NSIF valuation and are shown in Table 14 (see section 2.4.3.3.).

Table 3.9: PSPF - Valuation assumptions

Mortality:	Take 80 per cent of the mortality rates given in the *UN population table*
Invalidity:	Adjusted rates of the Italian experience as in the case of the NSIF

Other assumptions	**Year**					
	1	**2**	**3**	**4**	**5**	**6 and thereafter**
Salary escalation rate (%)	10	10	8	6	6	5
Discount rate (%)	10	10	10	8	7	7
Rate of increase of active members (contributors)	3	3	2	2	1	1
Rate of increase of minimum pension and other pensions (that is, the rates of revaluation of all pensions) beginning on 1 January 2003	25	20	15	10	8	5
Minimum pension on 31 December 2002	= 4,800 SD					
Minimum pension on 1 January 2003	= 6,000 SD					
Density of contribution	= 95%					
Fund as at 31 December 2002	= 33,614 Mn. SD					
Ratio of males to females	Assume that 60 per cent of all the new entrants are females					

Distribution of new entrants:

Age	**%**
20 - 24	20.0
25 - 34	50.0
36 – 49	30.0
Total	**100.0**

Table 3.10: Common scheme – Assumptions for the valuation

Item	NSIF		PSPF
Database	Use the same database as before		Use the same database as before
Mortality rates of actives	90% of UN Table		80% of UN Table
Mortality rates of inactive members	Use 110% of the rates applicable to actives		Use 110% of the rates applicable to actives
Invalidity	Adjusted Italian experience		Adjusted Italian experience
Insured salary escalation rates (%)	Private	10, 8, 6, 6, 6, 6 thereafter	10, 8, 6, 6, 6, 6 thereafter
	Public	10, 10, 8, 6, 6, 5 thereafter	
Discount rate	10, 10, 10, 8, 7, 7 thereafter		
Rate of increase of active members (contributors)	Private	6, 5, 5, 4, 3, 3 thereafter	3, 3, 2, 2, 1, 1 thereafter
	Public	1, 1, 1, 0, 0, 0 thereafter	
Density of contribution	Private	80%	95%
	Public	90%	
Minimum pension on 1 January 2003	6,000 SD		6,000 SD
Rate of increase of pensions. The first increase of 20% being in 2004	20, 15, 10, 8, 5 thereafter (from sixth year onwards)		20, 15, 10, 8, 5 thereafter (from sixth year onwards)
Fund as at 31 December 2002	26,000 million SD		33,614 million SD
Ratio of males to females amongst the new entrants	Assume 70% of all new entrants are females		Assume 60% of all new entrants are females
Distribution of new entrants according to the age	Use the distribution used in the NSIF valuation		Use the distribution used in the PSPF valuation
The decrement rates for early retirements, ministerial terminations, invalidity, resignation, etc.	Same decrement rates as before except for transfers to PSPF. Assume that there are no transfers to the PSPF in the future-decrement rate 0-		Same decrement rates as before except for transfers from the NSIF. Assume that there are no transfers from the NSIF in the future.
Assumed contribution rate in respect of the long term benefit branch	24.25% of insured salaries		24.25% of insured salaries
Future provision for administrative expenses	Variable rates reducing to 3% of the insured earnings after year five (same basis as before)		2% of the insured earnings from year one (same basis as before)

Note: Basically, all assumptions other than the discount rate (for NSIF) and the decrement rates for the transfers to PSPF (which is taken to be zero (0)) remain unchanged.

Table 3.11 Invalidity rates (the probability of a person in a given age range becoming an invalid within one year)

Age range	Males	Females
1	2	3
15 – 19	0.00003	0.00002
20 – 24	0.00006	0.00005
25 – 29	0.00012	0.00011
30 – 34	0.00023	0.00021
35 – 39	0.00038	0.00034
40 – 44	0.00069	0.00054
45 – 49	0.00122	0.00097
50 – 54	0.00220	0.00186
55 – 59	0.00349	0.00295

Source: Adjusted Italian experience.

3.4.3.4. Family structure

Information on the family structure of an insured person is necessary for the projection of survivors' benefits, in order to estimate the quantum of benefits payable on their death. Assumptions had to be made on the:

- probability of being married;
- age difference between spouses;
- average number of children being eligible for a child supplement, and
- average age of those children.

In the absence of reliable published statistics on the family structure of the insured population, the factors used in the valuation are based on the opinions expressed by the senior officers of the PSPF and they are shown in Table 2.13 (see section 2.4.3.4).

3.4.3.5. Rate of growth of the active-insured population (the contributors)

The PSPF covers only a very small percentage of the employed population. It is understood that when privatisation of certain government-owned institutions occurs in the near future their employees who now contribute to the PSPF would cease to be contributing members. Hence, the growth of the insured population will depend on the extent to which government organizations will be expanded/strengthened in the future. Hence, the growth of the PSPF will not have a strong relationship with the expected rate of growth of the total labour force of the country. For these reasons the rates of growth of the insured population assumed in the projections are the rates of growth anticipated by the PSPF senior officers, and are as follows:

- 3 per cent per annum in years 1and 2;
- 2 per cent per annum in years 3 and 4,
- 1 per cent per annum thereafter.

3.4.3.6. Future inflation rate

During the past four years, the inflation rate has fallen appreciably and authorities are confident that it could drop further. Hence, for this valuation, from projection year four onwards an inflation rate of 4 per cent per annum was assumed.

3.4.3.7. Rate of escalation of insurable earnings (IE)

Normally, there is a relationship in each country between the rate of salary escalation (that is the increases granted to compensate the increase in the cost of living) and the rate of inflation. In Sudan, the rate of inflation fell significantly during the previous four years and is expected to drop further. The Government decides on the rates of increase of salaries of public servants and in the past those rates had no direct relationship with the prevailing rates of inflation. With the agreement of relevant PSPF senior officers, the following average rates of escalation of IE have been assumed for the future in the actuarial projections

- 10 per cent in year 1 and 2
- 8 per cent per annum in year 3
- 6 per cent per annum in years 4 and 5
- 5 per cent per annum from year 6 onwards

The above assumptions imply that from the projection year six onwards the average rate of salary escalation will exceed the average rate of inflation by 1 percentage point.

Salary increases, in consideration of years of service, promotions, and/or an increase in productivity, are depicted in the relative salary scale functions chosen for the projections as shown in Table 2.14 (public-sector rates) (see section 2.4.3.7).

3.4.3.8. Rate of interest (rate of return on investments)

This represents the average rate of interest assumed in the valuation in order to estimate the future investment income of the scheme. It should represent the expected average long-term rate of return on investment of scheme reserves. High rates of interest are normally associated with high inflation rates. The rates of return on investments obtained during the period from 1998 to 2000 are shown in Table 1.2 (see section 1.3.3.3).

With the agreement of PSPF senior officers, the rates of interest assumed in this valuation are as follows:

- 10 per cent in years 1, 2, 3;
- 8 per cent in years 4,
- 7 per cent per annum from year 5 onwards.

What is significant in the actuarial valuation conducted for determination of the required contribution rate is the difference in the long term between the assumed values of future interest rates and salary escalation rates and the inflation rates rather than their absolute values.

When the gap between assumed interest rates and salary escalation rates is higher, it would lead to lower contribution rates and vice versa.

The adopted assumptions imply that a real interest rate (that is, the nominal interest rate minus the rate of inflation) of 3 per cent per annum will be obtained from projection year five onwards.

3.4.3.9. Adjustment of pensions

For status quo projections, with the concurrence of PSPF senior officers, it has been assumed that all pensions will be adjusted each year and the adjustments will be made at the following rates. (The concerned senior officers were of the view that high increases will be granted in the first few years in order to partially mitigate the ill effects of high inflation in the past.)

- 25 per cent on 1 August 2003 and thereafter at 20 per cent, 15 per cent, 10 per cent, 8 per cent per annum and 5 per cent per annum in subsequent years.
- assumed that the minimum pension as at 31 December 2002 = 4,800 SD
- as at 1 August 2003 = 6,000 SD.

3.4.4 0. Commutation of pensions

It has been assumed that all new pensioners (old-age and invalidity) will commute one-third of the pension amount, as the present commutation factors are generous.

3.4.3.1.0. Gender/age distribution of new entrants

These distributions were established on the basis of the information given by PSPF senior officers. The assumed distributions are shown in Table 3.9.

On the advice of PSPF senior officers, it has been assumed that 60 per cent of all future new entrants will be females. It has also been assumed that the starting IE of the first group of new entrants will be the same as the assumed average IE of the insured population (of the same ages) as at the valuation date. For each subsequent group of new entrants, the starting average IE is increased to reflect the assumed annual salary escalation on account of the increase of the cost of living. The relative salary scales for new entrants after they enter the scheme are assumed to be the same as those of the initial population.

3.4.3.11. Initial reserve

Based on unaudited accounts as at 31 December 2002, it has been assumed that the total reserve of the Fund as at the valuation date is equal to 33,614 million SD.

3.4.4. Pension projections according to existing provisions of the PSPF

All projections have been made assuming 31 December 2002 as the valuation date.

3.4.4.1. Projections for status quo conditions – Scenario 1

At present, all pensions-in-payment are adjusted as and when the Government directs the PSPF to do so. The projections for the status quo conditions were made assuming that all the current benefits (including the end-of-service gratuities, and so on) will continue to be paid and, as at present, also in the future, all pensions-in-payment will be adjusted at the assumed rates of increases given in section 3.4.3.8 and that the public-sector employees who are members of the NSIF (both the old entrants and the future new entrants) would be transferred to the PSPF when such employees reach grade 14 and the NSIF would then pay the "actuarial reserves" relating to such employees to the PSPF.

3.4.4.2. Projections for an alternative scenario – Scenario 2

In view of current thinking that the IE base soon will be widened by inclusion of some more allowances, it was assumed that the initial contribution base (that is, the initial IE) of employees in the public sector will be increased by 30 per cent in year one. At the request of PSPF senior officials, the financial implications of the revaluation of pensions at the following rates were examined. (This was done primarily to ascertain the implications of widening the contribution base without changing the pension formula.)

- All pensions will be increased annually as in Scenario 1 at 25 per cent, 20 per cent, 15 per cent, 10 per cent, 8 per cent and 5 per cent thereafter.

The results of the above projections are as follows.

For Status Quo conditions — Scenario 1

3.4.4.1.1. Demographic projections

The results are given in Table 3.12, which shows the number of active members, different categories of pensioners (other than those whose liabilities are wholly met by the Government) and recipients of lump sums at single and quinquennial intervals during the next 50 years. Column 10 indicates the ratio of the number of old-age pensioners to the number of active insured pensions (pension dependency ratios). It is evident that the ratio increases from 9.32 per cent in 2003 to 56.77 per cent by the year 2028 and then decreases to 54.28 per cent by the year 2052.

3.4.4.1.2. Financial projections

The relevant result are given in Table 3.13, which shows, at single and quinquennial intervals, the expected amount of IE and the amount of benefits expected to be paid to different categories of beneficiaries in the future.

Column 11 indicates the ratios of the average of the old-age pensions-in-payment to the average of IE – replacement ratios.

It is evident that the replacement ratio increases from 57.78 per cent in the year 2003 to 65.38 per cent by the year 2006 and then decreases gradually to 49.45 per cent by the year 2052. It should be noted that only two-thirds of the initial pension has been assumed to be payable (and is revalued) as one-third is assumed to have been commuted at inception.

The present value (that means the discounted value) of liabilities that have to be met by the Government during the next 50 years has been estimated to be 303,205 Mn. SD.

Table 3.12. PSPF beneficiaries

Year	Active-insured members	NSIF transferees	Pensioners			Recipients of lump-sums		Total number of pensioners	Per cent old-age pensioners to (active insured persons + NSIF transferees)
			Retired	Persons with disabilities	Widows/ widowers	Retired	Others		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2003	365,141	2,348	34,266	278	2,978	0	28	37,522	9.32
2004	370,184	2,402	41,589	542	3,170	4	40	45,301	11.16
2005	373,619	2,434	48,458	809	3,398	433	45	52,665	12.89
2006	377,080	2,462	54,290	1,079	3,654	430	48	59,023	14.30
2007	378,837	2,492	62,223	1,353	3,930	10	51	67,506	16.32
2008	380,595	2,524	68,753	1,632	4,234	203	54	74,619	17.95
2013	389,540	2,699	98,273	3,134	5,928	210	88	107,335	25.05
2018	398,710	2,731	132,959	4,733	7,748	740	86	145,440	33.12
2023	408,128	2,628	188,186	6,061	9,723	445	103	203,970	45.81
2028	417,866	2,570	219,558	6,946	11,776	556	126	238,280	52.22
2033	427,858	2,538	244,321	7,403	13,358	761	134	265,082	56.77
2038	438,134	2,579	246,101	7,749	14,209	644	121	268,059	55.84
2043	448,684	2,627	244,611	8,109	14,249	634	111	266,969	54.20
2048	459,534	2,643	248,773	8,489	13,832	531	108	271,094	53.83
2052	468,436	2,634	255,683	8,760	13,395	555	116	277,838	54.28

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Table 3.13. Benefits (in Mn. SD)

Year	Annual IE	Annual pensions			Lump sums		Commuted pension, etc.	Average annual		Per cent of average old-age pension to average IE
		Retired	Invalids	Widows/ widowers	Retired	Others		Insurable earnings	Old-age pension	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
2003	48,089	2,608	17	247	0	7	10,058	.1317	.0761	57.78
2004	53,620	3,734	38	325	0	8	5,165	.1448	.0898	62.02
2005	58,441	4,869	63	411	19	8	5,464	.1564	.1005	64.26
2006	62,514	5,887	91	496	20	8	5,049	.1658	.1084	65.38
2007	66,571	7,070	122	586	3	9	7,169	.1757	.1136	64.66
2008	70,220	8,061	153	670	36	10	6,494	.1845	.1172	63.52
2013	91701	13,871	363	1,221	121	36	7,248	.2354	.1411	59.94
2018	119,759	23,002	689	2,019	583	44	15,540	.3004	.1731	57.62
2023	156,415	39,850	1,119	3,172	481	62	29,617	.3832	.2118	55.27
2028	204,336	58,070	1,628	4,793	793	105	27,445	.4890	.2645	54.09
2033	268,954	80,761	2,197	6,807	1,405	156	29,205	.6286	.3306	52.59
2038	348,795	101,511	2,908	9,074	1,502	177	29,744	.7961	.4125	51.82
2043	455,754	126,094	3,856	11,406	1,890	206	45,232	1.0158	.5155	50.75
2048	595,571	160,947	5,125	13,885	2,013	239	66,077	1.2960	.6470	49.92
2052	737,781	199,126	6,419	16,124	2,557	313	86,729	1.5750	.7788	49.45

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The present value of 1 per cent of future IE of PSPF members expected during the next 50 years has been estimated to be 16,466 Mn. SD. Hence, the contribution rate required to meet government liability during the next 50 years would be 18.41 per cent of IE.

The pay-as-you-go (PAYG) rates required to meet the liabilities vesting on the PSPF seem to fluctuate widely – 14.36 per cent in 2003, 12.11 per cent in 2004, 8.66 per cent in 2005, 16.99 per cent in 2011 and going up to 49.67 per cent in 2052.

The net General Average Premium (GAP) rate of contribution required for a period of 50 years to meet liabilities that would vest on the PSPF has been estimated to be 28.08 per cent of IE. This means a contribution rate equal to 28.08 per cent of IE along with the initial reserve of 33,614 Mn. SD would be adequate to meet benefit payments expected to vest on the PSPF during the next 50 years.

If the partial-funding system of financing known as the SP rate system of financing were to be adopted, the required net contribution rates to meet liabilities vesting on the PSPF would be as follows for a period of equilibrium of:

- 20 years – 14.20 per cent of IE,
- 25 years – 17.77 per cent of IE.

The required gross contribution rates would be the above rates plus 2 per cent, which is the recommended provision to meet administrative expenses.

It should be noted that under the SP rate system of financing noted above the given contribution rates may have to be raised before the expiry of the relevant period of equilibrium and the timing and quantum of the revision would depend on the actual experience of the Fund with regard to investment earnings, escalation of IE, growth of membership, and so on.

It is thus evident that the liabilities vesting on both the PSPF and the Government are enormous.

If the Government continues to meet its commitment to meet the liabilities in respect of pre-1 July 1994 service, then under the partial funding system of financing the present rate of contribution would be adequate to finance benefits payable by the PSPF for 25 years. (Based on the past experience of the NSIF and the PSPF, it is assumed that 0.75 per cent of IE would be adequate to meet the EIB branch commitments, leaving 24.25 per cent of IE to meet the pension branch commitments) as the required scaled premium rate (SP rate) of contribution for a period of equilibrium of 25 years would be:

- = 17.77+2.22+0.75=20.52 per cent of IE, and for a period of equilibrium of 20 years it would be = 14.20+2.00+0.75 = 16.95 per cent of IE.

As an alternative option, if government liability is limited to the liability in respect of beneficiaries as at the date of valuation (that is, only in respect of pensioners as at the date of valuation and their prospective survivors), then the actuarial present value of this liability has been estimated to be 126,648 Mn. SD. The rate of contribution required each year during the next 50 years to meet this liability has been estimated to be 7.69 per cent of IE of active members of the PSPF. Under this alternative option, the rest of the liabilities would fall on the PSPF (that means the total liabilities of new beneficiaries). Then the contributions required to meet those liabilities would be as follows:

- The net GAP rate for 50 years = 35.77 per cent;
- The net SP rate for a period of equilibrium of:
    - 20 years = 26.68 per cent
    - 25 years = 29.80 per cent

The required gross contribution rates would be the above rates plus another 2 per cent to meet administration expenses.

It is thus evident under the said conditions that the PSPF will not be able to meet liabilities with a contribution of 24.25 per cent (leaving 0.75 per cent for financing EIB).

Another alternative mode of meeting liabilities is discussed below.

PSPF to meet liabilities as agreed initially. Financing to be done using the SP rate system with a period of equilibrium of 25 years. The required gross contribution rate being 19.77 per cent of IE.

Then, the balance of the current contribution rate of 25 per cent of IE (25.00 - 19.77 - 0.75 = 4.48 per cent) would be set off against the required special contributions from the Government so as to meet its commitment (which is 18.41 per cent of IE).

Then, the required contribution from the Government would be 18.41- 4.48 = 13.92 per cent of IE.

At the next valuation these rates could be reviewed taking into consideration the actual experience of the Fund.

The projected revenue and expenditure up to the year 2053 in respect of liabilities vesting on the PSPF and the Government are shown in Tables 3.14 and 34.

For Alternative scenario 2, the contribution rates required to finance the liabilities vesting on the PSPF are as follows:

- GAP rate for 50 years = 29.95 per cent
- SP for a period of equilibrium of 25 years = 18.78 per cent
- SP for a period of equilibrium of 20 years = 15.02 per cent

Thus it is evident that all three rates are higher than the corresponding rates under Scenario 1.

Hence, it is evident that widening the contribution base without any adjustment to the pension formula would increase the cost of financing PSPF liabilities.

Table 3.14. PSPF - Projected revenue and expenditure - Government liabilities (in Mn. SD)

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2019
Expenditure	**14,527**	**12,593**	**16,679**	**17,447**	**19,515**	**19,957**	**20,691**	**21,050**	**22,850**	**23,427**	**23,711**	**24,764**	**25,390**	**26,773**	**27,257**	**29,934**
Benefits	**14,527**	**12,593**	**16,679**	**17,447**	**19,515**	**19,957**	**20,691**	**21,050**	**22,850**	**23,427**	**23,711**	**24,764**	**25,390**	**26,773**	**27,257**	**29,934**
Pensions	**9,485**	**11,223**	**13,010**	**14,298**	**15,561**	**16,338**	**17,185**	**17,893**	**18,972**	**19,863**	**20,594**	**21,398**	**22,148**	**22,994**	**23,701**	**25,756**
Old-age and invalidity	7,546	8,941	10,432	11,505	12,589	13,258	13,994	14,586	15,549	16,319	16,928	17,609	18,236	18,960	19,546	21,363
Government only	5,769	6,670	7,381	7,801	8,082	8,125	8,154	8,167	8,163	8,143	8,105	8,050	7,978	7,526	7,784	7,526
Shared	1,777	2,271	3,051	3,704	4,507	5,133	5,840	6,419	7,386	8,176	8,823	9,559	13,837	11,071	11,762	13,837
Survivors'	1,939	2,282	2,578	2,793	2,972	3,080	3,191	3,307	3,423	3,544	3,666	3,789	3,912	4,034	4,155	4,393
Government only	1,752	2,038	2,276	2,434	2,554	2,606	2,656	2,705	2,751	2,794	2,833	2,869	2,901	2,984	2,952	2,984
Shared	187	244	302	359	418	474	535	602	672	750	833	920	1,409	1,105	1,203	1,409
Grants (shared liabilities)	**5,042**	**1,370**	**3,669**	**3,149**	**3,954**	**3,619**	**3,506**	**3,157**	**3,878**	**3,564**	**3,117**	**3,366**	**3,242**	**3,779**	**3,556**	**4,178**
Commuted pension	4,806	1,301	3,454	2,986	3,748	3,386	3,307	2,817	3,611	3,245	2,919	3,159	3,054	3,551	3,361	3,955
Additional lump-sum	235	68	189	162	205	199	195	183	231	221	193	200	183	210	192	220
Special lump-sum	1	1	26	1	1	34	4	157	36	98	5	7	5	18	3	3

Table 3.14. PSPF - Projected revenue and expenditure - Government liabilities (in Mn. SD) (Cont.'d.)

Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Expenditure	**30,947**	**31,512**	**33,344**	**34,538**	**33,784**	**34,138**	**34,080**	**34,356**	**34,494**	**34,687**	**34,826**	**34,801**	**34,894**	**34,781**	**34,561**	**34,245**
Benefits	**30,947**	**31,512**	**33,344**	**34,538**	**33,784**	**34,138**	**34,080**	**34,356**	**34,494**	**34,687**	**34,826**	**34,801**	**34,894**	**34,781**	**34,561**	**34,245**
Pensions	**26,847**	**27,814**	**28,842**	**30,730**	**31,471**	**32,269**	**32,714**	**33,179**	**33,536**	**33,971**	**34,392**	**34,528**	**34,718**	**34,681**	**34,511**	**34,217**
Old-age and invalidity	22,338	23,192	24,111	25,893	26,525	27,219	27,566	27,942	28,217	28,582	28,939	29,022	29,169	29,101	28,913	28,615
Government only	7,376	7,213	7,039	6,853	6,658	6,454	6,243	6,025	5,800	5,570	5,336	5,096	4,854	4,611	4,367	4'121
Shared	14,962	15,979	17,072	19,040	19,867	20,765	21,323	21,917	22,417	23,012	23,603	23,926	24,315	24,490	24,546	24,494
Survivors'	4,509	4,622	4,731	4,837	4,946	5,050	5,148	5,237	5,319	5,389	5,453	5,506	5,549	5,580	5,598	5,602
Government only	2,993	2,997	2,996	2,991	2,980	2,966	2,947	2,924	2,898	2,865	2,831	2,791	2,747	2,700	2,648	2,593
Shared	1,516	1,625	1,735	1,846	1,966	2,084	2,201	2,313	2,421	2,524	2,622	2,715	2,802	2,880	2,950	3,009
Grants (shared liabilities)	**4,100**	**3,698**	**4,502**	**3,808**	**2,313**	**1,869**	**1,366**	**1,177**	**958**	**716**	**434**	**273**	**176**	**100**	**50**	**28**
Commuted pension	3,878	3,503	4,266	3,576	2,187	1,763	1,291	1,110	901	671	405	253	163	92	45	26
Additional lump sum	219	193	234	230	125	105	75	67	57	45	29	20	13	8	5	2
Special lump sum	3	2	2	2	1	1	0	0	0	0	0	0	0	0	0	0

Table 3.14. PSPF - Projected revenue and expenditure - Government liabilities (in Mn. SD) (Cont.'d.)

Year	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052
Expenditure	**34,166**	**33,821**	**33,897**	**33,058**	**32,238**	**31,090**	**29,922**	**28,607**	**27,362**	**26,032**	**24,547**	**23,021**	**21,391**	**19,707**	**18,019**	**16,341**	**14,702**
Benefits	**34,166**	**33,821**	**33,897**	**33,058**	**32,238**	**31,090**	**29,922**	**28,607**	**27,362**	**26,032**	**24,547**	**23,021**	**21,391**	**19,707**	**18,019**	**16,341**	**14,702**
Pensions	**34,157**	**33,821**	**33,897**	**33,058**	**32,238**	**31,090**	**29,922**	**28,607**	**27,362**	**26,032**	**24,547**	**23,021**	**21,391**	**19,707**	**18,019**	**16,341**	**14,702**
Old-age and invalidity	28,566	28,256	28,373	27,591	26,841	25,779	24,712	23,512	22,397	21,210	19,881	18,523	17,076	15,586	14,104	12,643	11,228
Government only	3,875	3,628	3,383	3,141	2,903	2,669	2,439	2,215	1,997	1,788	1,589	1,401	1,223	1,058	905	764	637
Shared	24,691	24,628	24,990	24,450	23,938	23,110	22,273	21,297	20,400	19,422	18,292	17,122	15,853	14,528	13,199	11,879	10,591
Survivors'	5,591	5,565	5,524	5,467	5,397	5,311	5,210	5,095	4,965	4,822	4,666	4,498	4,315	4,121	3,915	3,698	3,474
Government only	2,533	2,470	2,402	2,331	2,257	2,179	2,098	2,014	1,926	1,836	1,744	1,650	1,553	1,455	1,355	1,254	1,154
Shared	3,058	3,095	3,122	3,136	3,140	3,132	3,112	3,081	3,039	2,986	2,922	2,848	2,762	2,666	2,560	2,444	2,320
Grants (shared liabilities)	**9**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Commuted pension	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Additional lump sum	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Special lump sum	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 34 **PSPF - Projected revenue and expenditure - for PSPF only liabilities for Scenario 2** (figure in Mn. SD)

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
1. REVENUE	15,261	17,571	20,031	21,105	22,433	24,421	26,551	28,833	31,157	33,596	36,301	39,034
Insurable Earnings	48,089	53,620	58,441	62,514	66,571	70,220	74,069	78,131	82,415	86,934	91,701	96,727
1.1 Contirbution income	11,662	13,003	14,172	15,160	16,143	17,028	17,962	18,947	19,986	21,082	22,238	23,456
1.2 Investment income	3,599	4,568	5,859	5,945	6,290	7,393	8,589	9,886	11,171	12,514	14,063	15,578
Contribution rate	24.25%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%
2. EXPENDITURE												
2.1 Benefits	**5,942**	**5,421**	**3,891**	**4,478**	**6,299**	**6,510**	**7,550**	**7,807**	**12,357**	**10,662**	**11,199**	**16,864**
2.2 Pensions	**919**	**1,618**	**2,068**	**2,549**	**3,071**	**3,588**	**4,112**	**4,726**	**5,385**	**6,072**	**6,912**	**8,299**
Old age & Invalidity	848	1,501	1,882	2,274	2,685	3,080	3,458	3,901	4,363	4,824	5,410	6,512
Invalidity	60	82	109	137	168	196	228	263	301	343	388	438
Transferees from NSIF	11	35	77	138	218	312	426	562	721	905	1,114	1,349
2.3 Grants	**5,023**	**3,803**	**1,823**	**1,929**	**3,228**	**2,922**	**3,438**	**3,081**	**6,972**	**4,590**	**4,287**	**8,565**
Commuted pension	4,735	3,586	1,729	1,791	3,074	2,775	3,205	2,897	6,231	4,233	3,902	7,945
Additional lump sum	282	210	92	110	143	134	167	151	299	212	234	451
Special lump sum	6	7	2	28	11	13	66	33	442	145	151	169
2.4 Administrative cost	**962**	**1,072**	**1,169**	**1,250**	**1,331**	**1,404**	**1,481**	**1,563**	**1,648**	**1,739**	**1,834**	**1,935**
Provision for administrative expenses	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Balance without interest	4,758	6,510	9,112	9,432	8,513	9,114	8,931	9,577	5,981	8,681	9,205	4,657
3. Balance with Interest	**8,357**	**11,078**	**14,971**	**15,377**	**14,803**	**16,507**	**17,520**	**19,463**	**17,152**	**21,195**	**23,268**	**20,235**
Reserve adjustment												
Reserve at beginning of year period	33614	42,424	54,034	69,591	85,595	101,056	118,240	136,444	156,596	174,431	196,295	220,212
Reserve transferred from NSIF	453	532	586	627	658	677	684	689	683	669	649	633
4. Reserve at year end	42,424	54,034	69,591	85,595	101,056	118,240	136,444	156,596	174,431	196,295	220,212	241,080
Funding ratio per benefit normal	6	8	14	16	14	16	16	17	13	16	18	13
PAYG cost rate	14.36%	12.11%	8.66%	9.16%	11.46%	11.27%	12.19%	11.99%	16.99%	14.26%	14.21%	19.44%

Table 34 PSPF - Projected revenue and expenditure - for PSPF only liabilities for Scenario 2 (figure in Mn. SD)

Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
1. REVENUE	41,876	44,883	47,965	51,104	54,232	57,358	60,490	63,427	66,089	68,921	71,985	75,111
Insurable Earnings	102,035	107,630	113,534	119,759	126,329	133,259	140,571	148,279	156,415	165,010	174,067	183,625
1.1 Contirbution income	24,743	26,100	27,532	29,042	30,635	32,315	34,089	35,958	37,931	40,015	42,211	44,529
1.2 Investment income	17,133	18,783	20,433	22,062	23,597	25,043	26,401	27,469	28,158	28,906	29,774	30,582
Contribution rate	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%
2. EXPENDITURE												
2.1 Benefits	**15,344**	**19,622**	**21,192**	**26,115**	**29,904**	**34,678**	**38,350**	**48,966**	**54,768**	**52,365**	**56,712**	**59,960**
2.2 Pensions	**9,406**	**10,797**	**12,422**	**14,211**	**16,364**	**18,789**	**21,496**	**25,215**	**28,416**	**31,900**	**35,426**	**39,222**
Old age & Invalidity	7,295	8,326	9,544	10,877	12,520	14,374	16,441	19,473	21,929	24,615	27,289	30,175
Invalidity	497	561	634	715	807	911	1,031	1,166	1,325	1,501	1,693	1,902
Transferees from NSIF	1,614	1,910	2,244	2,619	3,037	3,504	4,024	4,576	5,162	5,784	6,444	7,145
2.3 Grants	**5,938**	**8,825**	**8,770**	**11,904**	**13,540**	**15,889**	**16,854**	**23,751**	**26,352**	**20,465**	**21,286**	**20,738**
Commuted pension	5,397	7,603	7,961	10,732	12,464	14,674	15,573	22,101	24,514	18,881	19,570	19,004
Additional lump sum	269	375	403	548	638	759	807	1,151	1,297	989	1,041	1,001
Special lump sum	272	847	406	624	438	456	474	499	541	595	675	733
2.4 Administrative cost	**2,041**	**2,153**	**2,271**	**2,395**	**2,527**	**2,665**	**2,811**	**2,966**	**3,128**	**3,300**	**3,481**	**3,673**
Provision for administrative expenses	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Balance without interest	7,358	4,325	4,069	532	-1,796	-5,028	-7,072	-15,974	-19,965	-15,650	-17,982	-19,104
3. Balance with Interest	**24,491**	**23,108**	**24,502**	**22,594**	**21,801**	**20,015**	**19,329**	**11,495**	**8,193**	**13,256**	**11,792**	**11,478**
Reserve adjustment												
Reserve at beginning of year period	241,080	266,175	289,869	314,902	338,000	360,271	380,701	400,407	412,248	420,779	434,346	446,445
Reserve transferred from NSIF	604	586	531	504	470	415	377	346	338	311	307	305
4. Reserve at year end	266,175	289,869	314,902	338,000	360,271	380,701	400,407	412,248	420,779	434,346	446,445	458,228
Funding ratio per benefit normal	16	14	14	12	11	10	10	8	8	8	8	7
PAYG cost rate	17.04%	20.23%	20.67%	23.81%	25.67%	28.02%	29.28%	35.02%	37.01%	33.73%	34.58%	34.65%

Table 34 **PSPF - Projected revenue and expenditure - for PSPF only liabilities for Scenario 2** (figure in Mn. SD)

Year	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
1. REVENUE	78,166	81,007	83,613	86,041	88,401	90,633	92,785	94,915	96,954	98,944	100,889	102,690
Insurable Earnings	193,703	204,336	215,553	227,390	239,879	253,052	266,954	281,618	297,088	313,411	330,630	348,795
1.1 Contirbution income	46,973	49,552	52,272	55,142	58,171	61,365	64,736	68,292	72,044	76,002	80,178	84,583
1.2 Investment income	31,193	31,455	31,341	30,899	30,230	29,268	28,049	26,623	24,910	22,942	20,711	18,107
Contribution rate	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%
2. EXPENDITURE												
2.1 Benefits	**68,311**	**75,752**	**84,405**	**90,019**	**95,423**	**102,735**	**106,863**	**112,568**	**118,967**	**123,498**	**130,088**	**137,550**
2.2 Pensions	**43,549**	**48,368**	**53,593**	**58,916**	**64,545**	**70,355**	**76,198**	**82,161**	**88,311**	**94,083**	**100,209**	**106,128**
Old age & Invalidity	33,522	37,281	41,361	45,447	49,743	54,133	58,468	62,835	67,297	71,288	75,521	79,429
Invalidity	2,127	2,372	2,638	2,927	3,238	3,571	3,926	4,300	4,691	5,099	5,519	5,953
Transferees from NSIF	7,900	8,715	9,594	10,542	11,564	12,651	13,804	15,026	16,323	17,696	19,169	20,746
2.3 Grants	**24,762**	**27,384**	**30,812**	**31,103**	**30,878**	**32,380**	**30,665**	**30,407**	**30,656**	**29,415**	**29,879**	**31,422**
Commuted pension	22,753	25,167	28,306	28,461	28,138	29,404	27,626	27,279	27,520	26,369	26,807	28,190
Additional lump sum	1,201	1,319	1,490	1,507	1,475	1,567	1,478	1,475	1,511	1,455	1,475	1,554
Special lump sum	808	898	1,016	1,135	1,265	1,409	1,561	1,653	1,625	1,591	1,597	1,678
2.4 Administrative cost	**3,874**	**4,087**	**4,311**	**4,548**	**4,798**	**5,061**	**5,339**	**5,632**	**5,942**	**6,268**	**6,613**	**6,976**
Provision for administrative expenses	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Balance without interest	-25,212	-30,287	-36,444	-39,425	-42,050	-46,431	-47,466	-49,908	-52,865	-53,764	-56,523	-59,943
3. Balance with Interest	**5,981**	**1,168**	**-5,103**	**-8,526**	**-11,820**	**-17,163**	**-19,417**	**-23,285**	**-27,955**	**-30,822**	**-35,812**	**-41,836**
Reserve adjustment												
Reserve at beginning of year period	458,228	464,509	465,962	461,139	452,887	441,335	424,435	405,290	382,292	354,639	324,135	288,658
Reserve transferred from NSIF	300	285	280	274	268	263	272	287	302	318	335	354
4. Reserve at year end	464,509	465,962	461,139	452,887	441,335	424,435	405,290	382,292	354,639	324,135	288,658	247,176
Funding ratio per benefit normal	7	6	6	5	5	4	4	4	3	3	2	2
PAYG cost rate	37.27%	39.07%	41.16%	41.59%	41.78%	42.60%	42.03%	41.97%	42.04%	41.40%	41.35%	41.44%

Table 34 **PSPF - Projected revenue and expenditure - for PSPF only liabilities for Scenario 2** (figure in Mn. SD)

Year	**2039**	**2040**	**2041**	**2042**	**2043**	**2044**	**2045**	**2046**	**2047**	**2048**	**2049**	**2050**
1. REVENUE	104,234	105,422	106,193	106,450	110,520	116,595	123,004	129,765	136,899	144,426	152,367	160,745
Insurable Earnings	367,958	388,177	409,507	432,011	455,754	480,803	507,231	535,115	564,533	595,571	628,318	662,868
1.1 Contirbution income	89,230	94,133	99,305	104,763	110,520	116,595	123,004	129,765	136,899	144,426	152,367	160,745
1.2 Investment income	15,004	11,289	6,888	1,687								
Contribution rate	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%
2. EXPENDITURE												
2.1 Benefits	**147,532**	**157,587**	**169,003**	**181,447**	**194,625**	**208,463**	**222,940**	**238,202**	**254,615**	**271,886**	**290,162**	**309,613**
2.2 Pensions	**113,323**	**120,839**	**129,089**	**137,873**	**147,298**	**157,188**	**167,699**	**178,933**	**190,858**	**203,556**	**217,000**	**231,209**
Old age & Invalidity	84,494	89,753	95,615	101,861	108,654	115,804	123,485	131,790	140,680	150,220	160,391	171,211
Invalidity	6,398	6,857	7,331	7,819	8,324	8,846	9,386	9,944	10,522	11,122	11,748	12,402
Transferees from NSIF	22,431	24,229	26,143	28,193	30,320	32,538	34,828	37,199	39,656	42,214	44,861	47,596
2.3 Grants	**34,209**	**36,748**	**39,914**	**43,574**	**47,327**	**51,275**	**55,241**	**59,269**	**63,757**	**68,330**	**73,162**	**78,404**
Commuted pension	30,727	33,028	35,952	39,376	42,879	46,570	50,267	54,043	58,239	62,509	66,998	71,832
Additional lump sum	1,687	1,806	1,960	2,143	2,352	2,588	2,841	3,069	3,328	3,569	3,809	4,073
Special lump sum	1,795	1,914	2,002	2,055	2,096	2,117	2,133	2,157	2,190	2,252	2,355	2,499
2.4 Administrative cost	**7,359**	**7,764**	**8,190**	**8,640**	**9,115**	**9,616**	**10,145**	**10,702**	**11,291**	**11,911**	**12,566**	**13,257**
Provision for administrative expenses	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Balance without interest	-65,661	-71,218	-77,888	-85,324	-93,220	-101,484	-110,081	-119,139	-129,007	-139,371	-150,361	-162,125
3. Balance with Interest	**-50,657**	**-59,929**	**-71,000**	**-83,637**	**-93,220**	**-101,484**	**-110,081**	**-119,139**	**-129,007**	**-139,371**	**-150,361**	**-162,125**
Reserve adjustment												
Reserve at beginning of year period	247,176	196,892	137,356	66,770	-16,431	-109,192	-210,193	-319,766	-438,371	-566,817	-705,599	-855,342
Reserve transferred from NSIF	373	393	414	436	459	483	508	534	561	589	618	648
4. Reserve at year end	196,892	137,356	66,770	-16,431	-109,192	-210,193	-319,766	-438,371	-566,817	-705,599	-855,342	-1,016,819
Funding ratio per benefit normal	2	1	1	0	-0.08	-1	-1	-1	-2	-2	-2	-3
PAYG cost rate	42.09%	42.60%	43.27%	44.00%	44.70%	45.36%	45.95%	46.51%	47.10%	47.65%	48.18%	48.71%

3.5. Employment injury benefit (EIB) cost estimation

Detailed information about past claims experience was not readily available. However, a comparison of the total amount of claims paid in each of the last four years with 2 per cent of the contribution income of the year indicates that the claims paid amount to only a small fraction of the income assigned to this branch. Hence, it is evident that the currently apportioned contribution of 2 per cent of IE is not necessary for the financing of this branch of benefits. As a prudent measure though, it is recommended that 0.75 per cent of IE be assigned to finance this branch of benefits as in the case of the NSIF.

3.5.1. Sensitivity analysis

For financing the liabilities vesting on the PSPF, the required GAP rates for 50 years was estimated using higher and lower differences between the assumed discount rates and salary escalation rates. This was done by using 1 percentage point higher discount rates and 1 percentage point lower discount rates than the rates used for the projections under the basic scenario but keeping the salary escalation rates unchanged. The results are as follows:

- higher GAP – discount rate percentages 11, 11, 11, 9 and 8 thereafter;
- required GAP rate = 25.93 per cent (for the basic scenario, it was 28.08 per cent);
- lower GAP – discount rate percentages 9, 9, 9, 7 and 6 thereafter;
- required GAP rate = 30.22 per cent (for the basic scenario, it was 28.08 per cent).

Hence, the above results illustrate that higher GAP lowers the required contribution rate and lower GAP increases the required contribution rate.

3.6. Review of investments

3.6.1. Investment activities

At present the PSPF is engaged in large-scale property development and trading activities. Trading activities are not recommended for a social insurance scheme like the PSPF in view of the inherent risks associated with such activities.

Investment of social security funds should be done in accordance with four basic principles – security, yield, liquidity, social and economic utility. The investment policy appropriate for a social insurance fund will be examined in detail in section 5, point 5.7, but attention is drawn to the following two issues.

- Risky investments — It is not prudent for the PSPF (as at present) to invest a very high percentage of funds in property/property development and venture into trading activities which by the nature of such activites are risky and require high business acumen, Advancing money for such activities as secured loans may be considered but that also within limits of perhaps less than 5 per cent of the Fund). Even though suitable avenues of investment in the country are very limited, members' contributions in a social insurance fund should not be invested in risky ventures even if the anticipated rate of return is high.

- Investment committee and professional fund managers — The services of professional fund managers may be engaged to handle the portfolio although this would be done under the broad guidance and supervision of an investment committee of about seven members. The committee should include a professionally qualified accountant, a professional banker, a representative from the Central Bank and a representative from the Ministry of Finance. Committee members should be familiar with the country's capital markets and their operation.

3.7. Review of general accounting and financial management

Annual accounts are prepared and audited but the following shortcomings have been observed:

- comprehensive information on investment activities was not available, which has led to questions being raised about the transparency of investment activities;
- membership records were not complete or comprehensive;
- pensioners records were incomplete;
- there has been no separation of accounts or reserves for the two branches of benefits, the PSB and the EIB;
- no analysis of expenses seems to have been done in order to contain and reduce unnecessary expenses, if any.

3.8. Summary of problems, irregularities and recommendations pertaining to the PSPF

3.8.1. Problems

- No proper records have been maintained by the PSPF for all active members of the Fund so usual information required for a valuation is unavailable. This valuation has been conducted therefore on the basis of data samples provided by the PSPF. However, even these samples did not have the gender of the member and some ages appearing in the samples were incorrect. In order to obtain reliable results from an actuarial valuation the data should be correct and accurate; if this is not so, then the results of the valuation would be questionable.
- The benefits offered under this scheme are very generous and are far greater than the type of benefits normally provided under either a standard social insurance scheme or an occupational pension scheme. It should be evident from the results of this valuation that in view of the generous benefits offered under the scheme, the ensuing liabilities are enormous.
- Early retirement is allowed under certain circumstances without reducing the pension using factors determined according to actuarial principles. This has caused a tremendous strain on resources.

- There has been no separation of the reserves and the accounts in respect of the Pensions branch and the EIB branch.

- Contributions to the PSPF are based on basic salaries plus cost-of-living and housing allowances of members, but it is understood that other allowances, which are not taken into account for the purpose of paying the contributions, form a very high percentage of total earnings of a member. Hence, the IE (contribution base) of the scheme is relatively low. Consequently, the level of the current minimum pension is relatively high when compared with the average IE of members.

- Public servants, who are members of the NSIF, apply for better benefits offered by the PSPF when such employees get promoted to Grade 14 and become eligible to claim PSPF benefits by virtue of *Decree 574*. The NSIF is required to transfer to the PSPF the actuarial reserve of the employee who is being transferred and the PSPF is required to give credit for such reserve according to certain actuarial tables in determining the contributory period for calculation of benefits; these operations have created many problems to both the institutions.

- The rates of return on reserves are low compared to inflation rates, with the average during the last three years ranging from 1.66 per cent to 8.22 per cent. The rates of return are much lower than the average increase in IE and could be attributed to large-scale property investments and trading activities.

- All pensions-in-payment are revalued as and when the Government decides to do so, but rates of revaluation have no relationship to rates of development of IE of the Fund and/or to rates of return on the Fund. This has caused a strain on the Fund.

- As mentioned above the benefits offered are extremely generous (qualifying conditions, provision for early retirement, basis of commutation of pensions, gratuity payments, and so on) and are much wider than the type/scale of benefits generally provided under social insurance schemes. Hence, financing these benefits under conventional methods adopted for financing social insurance schemes would require a very high rate of contribution, whereas the relatively low contribution base has aggravated the situation.

- Commutation factors being used at present are too generous, and are the reason why almost all pensioners commute one-third of pension entitlement.

- The general public has a very low level of trust and confidence in the scheme – especially as payment of pensions is said to be delayed and public perception is that the investments are not made judiciously

- Administrative expenses are relatively high, considering the fact that collection of contributions is not a difficult exercise under a normal social insurance scheme.

3.8.2. Recommendations

- Update member contribution records, and subject them to appropriate edit checks in order to clean them. A special task force may be appointed to collect accurate and up-to-date information relating to active members and pensioners.

- Maintain the financial autonomy of each benefit branch (Pensions and EIB), for which purpose create separate reserves and maintain separate accounts of income and expenditure.

- Transfer to the PSPF all public servants who are now contributing to the NSIF. This may immediately cause a strain on the Fund, but, in the long run, it would be beneficial to both funds and would help to eliminate some existing anomalies in the level of benefits.

- Judiciously invest reserves with a view to obtaining an average rate of return, which will exceed the average rate of increase of IE by at least 2 percentage points.

- The rate of revaluation of pensions-in-payment should be related to the average rate of increase of IE and the rate of return on the Fund. Revaluation should be done if, and only if, the Fund records a surplus of income over expenditure. Even under such conditions, the rate of revaluation should be initially restricted to 80 per cent of the rate of increase of the average IE of members in the preceding calendar year.

- Restrict the benefits paid under the scheme to normal old-age, invalidity and survivors' benefits as well as EIBs. Other special benefits – end-of-service gratuities, pensions on retirement at very early ages due to special reasons, etc.) should be paid, if at all, out of government revenue.

- The contribution base should be widened by either changing to gross salaries or by the inclusion of additional allowances. If such a course of action were taken, it would be necessary to amend the pension calculation formula as suggested below.

  If and when the contribution base of membership is enlarged by inclusion of other allowances (that is, a change in the definition of IE), it would be necessary to amend the pension formula for the following reasons

  - henceforth, the pension amount would be calculated on the enhanced IE of those members, and

  - the previous contributions would have been made on lower levels of earnings. The following simple formula is recommended for this purpose.

  If the average level of IE of the insured employees increases to "k" times the old average level as a result of the revision of the definition of IE by inclusion of new allowances, etc. then the pension formula should be adjusted as follows when the pension amounts and other benefits payable are based on the new IE:

  - n = number of months of contributions received before the change

  - m = number of months of contributions received on the enhanced earnings base

  Then the number of months that should be taken into account for computation of the benefit amount = (m + n/k)

  The above simple formula has been suggested bearing in mind the need to keep the administration of the benefit calculations as simple as possible.

  - Early retirement age should be raised to 50 years (even if the member has contributed for 25 years) and early retirees should be paid reduced pensions in view of shorter contributory periods and longer pension-payable periods that would apply to them. It is recommended that the pension amount derived as per the normal formula be reduced by 5 per cent for each year that the actual retirement age is below the normal retirement age.

- The minimum number of monthly contributions required to qualify for a pension should be increased from the present 144 months of contributions to 180 months of contributions.

4. Principal features and differences of the NSIF and PSPF

4.1. Introduction

Both schemes are based on social insurance principles, with their income derived from contributions payable by private-sector employees in the case of the NSIF and by the Government and public organisations in the case of the PSPF. This situation is mirrored in many countries and it reflects the development of social security under which benefit schemes for public servants were often the first step to be taken. Most countries have subsequently developed social security schemes for private-sector workers. These may extend coverage to part of the public sector – in particular, to those who are not regarded as permanent, or who are employed by public organisations/institutions that have an autonomous status. Thus social security coverage may be extended in a variety of ways according to the situation in the country and taking into account political interaction. Liberalisation of the economy and, in particular,§§ privatisation has had a major impact on this issue with many public schemes being privatised and workers finding themselves in the private sector or, at least temporarily, without employment. Furthermore, changes in the structure of social security schemes have had implications for the preservation of benefit rights and labour mobility.

In this context, many countries have recognised the need to modify their social security system to ensure that it corresponds with new social security issues, in particular the extension of coverage of appropriate benefits to more people. The issues facing Sudan are thus familiar and concern the development of an integrated social security system, which can cover more people more effectively. The disparity between the size of the labour force and the small minority protected in any way by a social security system is a matter of global concern, on which the ILO is focusing through its worldwide campaign. Social security schemes can contribute to both economic development and poverty reduction. The unification of existing schemes can be seen as an important step towards a more effective social security system but it should not be seen as a panacea.

The ILO study has revealed, or perhaps focused attention on, a range of structural and administrative problems relating to the financing of the system; in particular, to its administration, to ensuring registration and compliance and to organisational and staff development. Beyond the scope of this project though is the need to extend relevant social security coverage to the vast majority of the people of Sudan who are excluded from existing schemes but who need social security to ensure a minimum income and at least access to basic health care.

4.2. Main features of the NSIF and PSFP

The benefits payable are determined by reference to a formula prescribed in the respective legislations. The schemes cover:

- all workers in central and regional governments, public organisations and institutions, and
- in the private and mixed sectors, those who work for employers who have five workers or more

In general, public-sector workers are covered by the PSFP and private-sector workers by the NSIF, but the PSPF benefit formulae is more favourable and legislation permits PSPF employees to be covered under the NSIF when they attain Grade 14 in the public sector.

The range of contingencies covered by the two schemes is similar and essentially refers to the needs of workers on termination of employment because of old age/retirement, invalidity and the death of a family breadwinner. The benefits take the form of income replacement in accordance with a formula (see section 4.3.3) and there is a distinction between termination on the grounds of age or invalidity and termination attributable to work-related incapacity. (In the lattercase, the rate of the benefit is generally higher.) Since the PSPF is effectively also an occupational scheme to provide both social security and work-related benefits to its workers, the range of benefits it provides includes an end-of-service gratuity.

4.3. Pensions

4.3.1. Pensionable age

In the pension scheme, entitlement is subject to retirement on or after the pensionable age of 60 for both schemes, but in the case of the NSIF the pensionable age for women is 55.

Early retirement is possible under either scheme subject to the payment of 144 monthly contributions. (In the NSIF, a lump sum representing the aggregate of all contributions paid is made on early retirement for those who retire before having paid 144 months' contributions. In the PSPF, a lump-sum is also payable at age 50 provided that 144 months' contributions have been made or even at an earlier age, if 300 contributions have been made. Otherwise, lump-sums based on length of service are paid.

4.3.2. Pensionable earnings

Insurable earnings (IE), used for the purpose of determining pension entitlement under either scheme, are based on a prescribed percentage of basic salary plus a cost-of-living allowance. Pensionable salary in the case of the NSIF is the average monthly earnings during the 12 months prior to retirement. In the case of the PSPF, where salaries are more stable and uniform in accordance with public-sector pay scales, the last month prior to retirement is used for the purpose of pension determination.

4.3.3. Pension formula

Under both schemes, pension entitlement is a function of length of service and earnings but the PSPF formula of 1/45 for 12 months' contributions is more favourable than that of 1/50 for the NSIF. On this basis the PSPF member with 360 months of service (30 years) will receive a pension of 50 per cent of earnings. Both schemes provide for a maximum pension rate:

- NSIF, 75 per cent of average IE during the 12 months of contributory service;

- PSPF, five-sixth of last month's insurable earnings but if service is less than 450 months' salary, a lump sum equal to two months' salary for each year in excess of 37,5 years in addition to the two months' salary normally payable.

4.3.4. Financing and contributory considerations

In the case of both the NSIF and the NPSF, contributions are based on basic pay plus the cost-of-living and nature-of-work allowances of the insured person. However, the Minister is empowered to include other allowances in the definition. There is no ceiling on IE.

NSIF — Covers private-sector workers employed in institutions with five or more employees and public-sector workers in grades 15,16 and 17. At present, private-sector coverage is very low. Enforcement and compliance work but inspectors needs to be strengthened as most eligible workers have not been registered and covered by the payment of contributions. The 1994 actuarial valuation in had been conducted on a fully-funded basis to determine the contribution rate of 25 per cent of IE.

PSFP — Covers public servants in grades other than 15,16 and 17 and also other public-sector employees. Full coverage has been achieved as part of the employment contract. No explicit reference to the intended financing system was made at the time of the valuation, but an estimate of the government's share of the liabilities was made in 1994. Presumably the contribution rate of 25 per cent was fixed to finance liabilities vesting on the PSPF on a full-funding basis. Contributions are based on basic salary plus cost-of-living and housing allowances.

4.3.5. Early retirement

It is normally considered appropriate for a pension to be awarded at a reduced level if retirement age is lower than that ordinarily provided for under the scheme. This is to take account of additional costs associated with paying the pension for a longer period.

Where a pension is taken on early retirement, under the PSPF, there is no provision for reduction, but under the NSIF there is provision for an early pension to be reduced by:

- 20 per cent if retirement age is less than 50 years; 15 per cent if between ages 50 and 55 and

- by 10 per cent if between ages 55 and 60.

4.4. Invalidity benefit

Where an invalidity pension is awarded in the case of total and permanent disablement, there is no qualifying period if the insured person was an active member of the scheme and a qualifying period is imposed if 50 per cent of average IE was payable as a pension during the last 12 contributory months, or the national retirement pension calculated for the contributed months, whichever is the higher.

If the period of service is equal to or more than 144 months, the pension is calculated according to the usual formula plus two months' salary. Otherwise a lump-sum is paid based on:

- two months' salary for each year of service when the period of service is three years or less

- two months' salary for the first three years of service and four months' salary for each year in excess of three years

Under both schemes, there is a maximum level for an invalidity benefit. Under NSIF, this amounts to 75 percent of average IE on which contributions have been paid during the

12 months' contributory period. Under the PSPF, however, the benefit payable is five months of monthly IE but if service is less than 450 months, a lump sum is payable of two months' salary for each year of service when the period of se§rvice is than two months' service for each year of service in excess of 37.5 years, in addition to the normal two months' salary.

4.5. Survivors' pensions

There are also different provisions and entitlements relating to survivors' benefits. For the survivors of an active member, the pension equals 50 per cent of the average insured salary during the last 12 contributory months or of the national retirement pension. If the period of service of the deceased is less than 144 ninths, the pension should be calculated and paid in the normal way together with four months' salary.

For the survivors of an inactive pensioner, the full amount of 75 per cent of contributions paid is paid to the surviving dependent(s).

The opportunity to commute part of the pension is an important feature of both schemes. Under the NSIF, up to one-third of the pension can be commuted to a lump sum in accordance with a table while the balance is payable during a specified period or until death. Thereafter, the full pension is payable. It is most unusual for pensions once commuted to be restored to full value unless a reimbursement is made. A similar provision applies to members and pensioners of the PSPF where the pension balance is payable over 15 years. Full pension is payable for 15 years or on earlier death

Both schemes also provide for benefits to be paid on termination of employment or on resignation. Under the NSIF, if the member is age 45 or more, a lump sum is payable but nothing is paid before age 45. Under the PSPF scheme, a lump sum is paid irrespective of age.

4.6. Institutional and administrative considerations

The functions and responsibilities of both the NSIF and the PSPF are very similar. Both organisations are structured along similar lines and both are answerable to the same Board of Directors. However, there are some differences. Both collect contributions from the same public-sector organisations but in addition NSIF collects them from private-sector enterprises that are liable to participate. The NSIF must also maintain contribution records for individual employees who are members of the scheme. It seems that this is required to verify compliance by employers in the payment of contributions. Instead of maintaining contribution records for public servants on an individual basis, the PSPF now rely on employment service records and on the employee's personnel file to determine entitlement to a pension.

Furthermore, at the national level, the NSIF has two additional directorates, the Directorate for Central Inspection and Coordination and the Directorate for External Sudanese Labour. The work of the former is incorporated into other Directorates in the PSPF; the responsibilities and functions of the latter lie solely with the NSIF – the PSPF has no such responsibility.

There are also differences regarding the collection and recording of contributions. While both organizations collect contributions from the same public-sector organizations, the NSIF also collects contributions from private-sector enterprises liable to participate. In addition to maintaining contribution records for employers, the NSIF maintains contribution records for individual employees. It seems essential to keep an accurate record of monthly contribution liability of enterprises and of employee records for when they change employers. In the past the PSPF has not maintained records for each public servant, relying instead on service history records to process claims for pensions, and on the Ministry of Finance to pay the correct amount of contributions owed. The PSPF, however, maintains a record for each individual employee, and is in the process of collecting this data.

Local offices are situated differently for the two organizations. As with the NSIF, PSPF is structured on a two-tiered basis. It has 19 local (or state) operational (service delivery) offices in 26 states, with the much larger national/headquarters office covering Khartoum State. Southern states have no PSPF office due to the war. The NSIF has 35 local offices, though not organized on a state basis. Khartoum has nine separate offices; while some states have multiple offices, others have none. The functions and responsibilities of these offices are very similar. The methods used for the collection of contributions, the processing of claims for pension and benefits, the ongoing payment of pensions and benefits (though they differ in that PSPF make provision for payment by direct deposit into bank accounts), the administrative and financial processes are very comparable. Both organizations are currently undergoing major changes to their computer systems; both are in the process of implementing a new computer network linking local and national offices and providing online access to national computer databases.

The two social insurance schemes are covered by different legislations.

Entitlements to pensions and benefits are different.

The administrative costs of both organizations, while both high, are very different – those of the NSIF being far in excess of the PSPF. Actual breakdowns of administrative costs for both organizations were unavailable.

4.7 Reasons for recommending a unified social security system

- **To provide uniformity in the level of pensions** — It is important to ensure that all NSIF and PSPF insured persons, in consideration of the same rate of contribution, are paid equal/same benefits, in the absence of valid actuarial reasons to the contrary. Introduction of a common scheme would, in the long run, help to promote equity for all persons protected by the scheme.

- **To provide better and more reliable social protection** — It is anticipated that unification of the two schemes will in the long run help to create a financially more stable scheme.

- **To eliminate problems relating to implementation of the provisions laid down under *Decree 574 of 1978*** — As noted, the implementation of these provisions has caused problems to both Funds which will cease only when the scales of benefit are independent of the grades of the employees, as foreseen under the proposed common scheme.

- **To facilitate mobility of labour from public to private sector and vice versa** — A common scheme would ensure that accrued benefits are preserved when employees move from public to private sector and vice versa.

- **To earn better investment returns from the funds** — A combined fund managed under the supervision of a common investment board/committee would facilitate taking judicious investment decisions, perhaps not possible with a smaller fund.

- **To facilitate introduction of a common operational system with improved administration** — This should render the scheme more transparent.

- **To effect savings in administrative expenses** while improving services rendered to insured members/beneficiaries.

- **To achieve economies of scale** in operational activities.

- **More equity, better social protection, and improved governance** — These factors will strengthen confidence in the pension scheme and will enhance social stability.

4.7.1. Proposed common scheme

The proposed common scheme would provide old-age, invalidity and survivors' benefits (long-term benefits) and employment injury benefits (EIBs).

The common scheme has been designed with the objective of providing as far as possible benefits similar to those of the PSPF.

The rate of accrual of old-age pension benefits is the same as the rate of accrual of present PSPF benefits. However, there are certain differences with regard to the following:

- minimum number of contributions required to qualify for an old-age pension, which is now 180 months as against 144 in the PSPF;

- qualifying conditions, and the scale of benefits for invalidity;

- minimum early retirement age with a reduced pension, now 50 years, as against 45 years in the NSIF and 25 years contributions in the PSPF;

- reduction in the pension for early retirees — The pension payable to early retirees would be reduced by factors derived as per actuarial principles.

The special benefits now paid by the PSPF will not be paid under the common scheme. It is recommended that the end-of-service benefits and other special benefits payable to public-sector employees be made from government revenue as separate occupational benefits and not from the common scheme.

It is proposed that the minimum pensions of the two groups of members (that is, those in the NSIF and those in the PSPF) be equalized after taking into consideration the cost implications of the alternatives examined in the projections).

The salient features of the proposed common scheme are given in Annex D.

5. Recommendations for a unified social security system

5.1. ILO Social Security Conventions and, in particular, Convention No. 102

Sudan has not ratified the *Social Security (Minimum Standards) Convention, 1952 (No. 102)*, which contains the basic requirements and general principles of Social Security and serves therefore as a guideline that should be applied to all social security schemes throughout the world. Provision of NSIF and PSPF benefits is compared below with requirements of the Convention.

Old-age pensions — Article 28 (a) in conjunction with Article 29, paragraph (a) and Article 65 of the convention stipulate that after 30 years of contributions, an old-age pension of at least 40 per cent of previous earnings has to be paid to a standard beneficiary. This condition is easily satisfied by both the NSIF and the PSPF.

Invalidity Benefits — Article 56 (a) in conjunction with Article 57, paragraph 1 (a) and Article 65 requires that after 15 years of contributions a pension of at least 40 per cent of the previous earnings has to be paid to a standard beneficiary.

- At the NSIF the minimum rate of invalidity benefit payable is 50 per cent of average insurable earnings (IE) of the last 12 months. Hence, the required condition is satisfied.

- At the PSPF the pension payable after 15 years contributions is only (1/45) (15) (100) = 33.33 per cent of the last IE. Hence, it would appear that the required condition is not satisfied by the PSPF.

Survivors' Benefits — The required level of minimum benefit is 40 per cent of previous IE after 15 years of contributions. Here, too, the NSIF satisfies the requirement, but the PSPF does not.

Indexation of Pensions — According to article 65, paragraph 10, the rates of current pensions should be reviewed following substantial changes in the general level of earnings where these result from substantial changes in the cost of living.

- At the NSIF there is no revision of pensions above the minimum pension. Hence, the requirement is not satisfied.

- At the PSPF there is revaluation of all pensions-in-payment. Hence, this requirement is satisfied.

Employment injury benefits (EIB) — As 80 per cent of IE is payable as a pension to a totally disabled person, the requirement relating to EIB has been satisfied by both schemes.

5.1.1. Reasons for recommending a unified social security system

The main functions undertaken by the two organizations are similar (see Annex A3 for details) and could eventually be performed by a single administration.

The main benefit would be derived from a considerable reduction in administrative costs, firstly by a pooling of resources (staffing, accommodation, transport, expertise, computer systems, and so on, and secondly by maximizing efficiencies and effectiveness through the elimination from the same public-sector organizations each month of duplicate financial and administrative procedures, as well as two computer systems performing basically the same tasks, and so on).

Another significant factor would be an improved service delivery for clients (contributors/pensioners) by greatly increasing access points by combining local offices.

The timing is right for the unification of the two organizations; both are in the process of implementing new computer systems, which should result in major changes to the way tasks are performed and subsequently change the operational processes, resulting in considerable reduction in workload. As a result, administrative responsibilities at both the national and local levels should also be changed.

To maximize the advantages of the computer systems, all operational activities should be examined to determine the most efficient and perhaps new ways of accomplishing daily work (e.g., processing claims at local rather than national level, having computers check qualifying conditions, calculating entitlements, checking contributions, producing reports, and so on).

To ensure the most efficient, effective and economic use of resources resulting from the new computer systems, the review of new operational processes and distribution of managerial responsibilities should be followed by a review of administrative structures of both organizations to reflect the changes in responsibilities.

Given that these reviews and re-organizations would be required anyway due to the eventual merging of the two organizations, that such reviews and restructuring should be carried out by joint working parties consisting of staff from both organizations.

To maximize the benefits to be obtained by merging two administrative organizations, it will be necessary to establish a single social insurance scheme, covered by one law. Qualifying conditions and entitlement would need to be adjusted to reflect a new single social insurance scheme covering both the public and private sector.

5.1.2. Recommended institutional and administrative options

The key issues concerning the unification of the two administrations include:

- Revision of social insurance legislation to reflect a single new pension scheme – having the same qualifying conditions and the same benefits for both the public and private sector. This will be essential to make it much more equitable for public- and private-sector workers who are paying the same rates of contribution; it will also have a significant effect on simplifying the administration of the scheme, thus making it much more efficient and cost-effective;

- New stronger official authority, such as that given to public officials (e.g. tax inspectors and customs officers), should be provided to social insurance inspectors to improve enforcement of compliance, which is currently non-existent). In the private-sector scheme, many employers are not registered and in both schemes many employers (government organizations, especially) do not meet their full contribution liability;

- The separation of the Board of Directors and the administration of the fund from the Government — management decisions concerning the fund should be made by the Board for the betterment of the fund and to protect the interests of the contributors, and should not be subject to government interference;

- An arm's length involvement by the Government in the management of the fund, as it has overall responsibility for ensuring the payment of pensions,

- The establishment of an independent external investment committee (with appropriate financial expertise) to advise the Board on investment activities.

5.1.2.1 Computer systems

Both the NSIF and the PSPF are currently involved in the implementation of new computer systems at both national and local levels. This should give local offices online access to national databases and will change daily operational processes of both organizations.

The implementation of the new systems should make the unification process much easier, as it should eliminate a lot of old manual processes currently undertaken, and a lot of unnecessary duplication of work that currently occurs.

It is extremely important that the new systems be tested at the operational level prior to implementation and that problems are resolved before unification.

It is also essential that the data contained in the computer systems be accurate and up-to-date. A single unique ID numbering system will need to be adopted.

The data recorded on both systems will need to be compatible; computer programs will need to be designed and developed to convert the data from both systems into an agreed common format.

Current systems will need to be changed to cater for the new legislative changes (i.e., same qualifying conditions, same benefits, and so on).

Current stand-alone systems (e.g., for investments, external Sudanese labour, and so on), may need to be retained.

5.1.2.2. Operational processes

With unification in mind, the implementation of new computer systems should be accompanied by a wholesale review of the operational processes of both organizations. The new systems should cause major changes to the way work is done, resulting in considerable workload reduction. To maximise the advantages of the new systems, all operational activities should be examined to determine the most efficient and cost effective new ways of doing work (e.g., process claims at local rather than national level; have computers calculate entitlements, check contributions and qualifying conditions produce reports; and so on).

5.1.2.3. Organisational structure

The operational review process should be followed by an administrative review to determine the optimum organisational structure best suited to administer the combined scheme in the most efficient and cost effective manner.

This should include a complete review of administrative structures to fit with the revised workflows, work volumes and new clerical processes. This will require new work measurements, estimates of staffing requirements for each work unit, and will involve new job descriptions, selection procedures, and so on, throughout the organizations.

These reviews would preferably be conducted by joint working parties consisting of suitable staff selected from both organizations.

It is important to keep in mind that this should be a new organisational structure, suited to the new processes and responsibilities, not just a copy of old structures.

5.1.2.4 Training

Training will be a major issue. Implementation of the new computer systems will require a major training program. Following a review, clerical processing changes will require significant training. Cultural change will be required in the mindset of staff very familiar with traditional clerical practices so as to come to grips with new ways of completing tasks, in dealing with both private- and public-sector clients, and so on.

5.1.2.5 Recruitment

It is assumed that most, if not all, recruitment for the new organization will be sought from within the two existing ones, as they are the source of required experience and expertise.

5.1.3. Staged implementation

It is recommended that the unification of the two administrations be undertaken in a multi-staged process over a suitable period of time. This could take the form of a top-down approach.

Stage 1 — could be unification of senior executive management, before changing functions at the operational level:

- this process has already started with the unification of the Board of Directors;
- the next step could be the appointment of a new Managing Director to head the new organization, together with a new senior management structure (whose responsibilities would include furthering the unification processes and managing the ongoing operations of the two pension fund organizations);
- select and appoint the external investment committee.

Stage 2 — commence review of the two investment departments; identify all issues that need to be addressed in unifying them.

- prioritize the issues;
- set a timetable/plan for unification of the investment departments;
- implement the plan;
    - commence review of the executive service units: Executive Office, Legal, Policy, Planning, Internal Audit, Public Relations.

Stage 3 — select one of the operational areas for unification (e.g., Finance, as the finance operations of the two organizations are already very similar):

- set up the joint working party to review all aspects of the two finance systems;
- identify and address all issues for the design of a new system suitable for the new scheme (e.g., do new bank accounts need to be opened? is there a need for new arrangements with Ministry of Finance/Subsidies Fund? what changes need to be made to processes at the local level? changes to accounting processes, and so on);
- prioritize all the tasks that have to be undertaken;
- allocate responsibility and resources for each of the tasks;
- estimate the time required and set target dates for completion of each task, and;
- develop a timetable/plan for implementation,
- implement the plan.

Stage 4 — select another operational area for unification (e.g., Personnel, Salaries), and commence the above processes.

Stage 5 — select the next operation for unification (e.g., collection of contributions), commence the above processes.

Stage 6 — as above, perhaps recording of contributions.

Stage 7 — as above (payment of pensions).

Stage 8 — as above (claims processing).

This process could be continued until all remaining functions of the two departments have been unified.

The above staged process is not intended to suggest any particular priority for the unification process, rather a methodology; nor is it intended to suggest that only one operational area at a time be subject for review and unification.

5.2. Recommended benefit eligibility criteria and level of protection

5.2.1. Old-age benefits

When payable:	On reaching normal retirement age
Normal retirement age	60 years, for both males and females
Pensionable monthly earnings:	Lower of:

- the average of revalued monthly IE during the last three years (revaluation to be done according to the average rates of increase of IE of the scheme in the preceding three calendar years), and

- the last month's IE.

  Pension accrual rate = (1/45) for 12 months' contributions.

  Minimum number of contributions required to qualify for old-age pension = 180 months.

  Benefit when the number of contributions is less than 180 = lump sum equal to

  - (number of months contributed) (average of the revalued contributions in the last three years).

Maximum rate of pension = five-sixth of final pensionable earnings.

Minimum pension = 4,800 SD on 31 December 2002.

Pension is payable for life.

5.2.2. Invalidity benefits

When payable — on sustaining permanent disability, which is certified by an approved medical panel.

Qualifying conditions – should satisfy at least one of the following contribution conditions:

- has paid or been credited with contributions for a minimum of 60 months of which the contributions must have been paid for at least 12 months within the period of 36 months preceding the commencement of invalidity,

- has paid or been credited with contributions for a minimum of 180 months.

5.2.2.1 Special invalidity credits (SIC)

Awarded only to those who satisfy the qualifying conditions mentioned above. SIC of six monthly contributions shall be awarded for every year between the age of 60 years and the age of the last birthday when invalidity occurred.

5.2.2.2 Rate of benefit

If at least 180 monthly contributions have been paid or credited (including the SIC), the rate of invalidity pension payable is determined as in the case of the old-age pension. If less than 180 monthly contributions have been paid or credited, then the rate of monthly invalidity pension shall be 30 per cent of the pensionable monthly salary.

Invalidity benefit payable to a disabled person who has paid at least 12 monthly contributions but is not entitled to an invalidity pension = lump sum equal to three times the final pensionable monthly salary for each 12 contributions paid or credited.

5.2.3. Survivors' benefits

When payable — on the death of an insured person who has satisfied either of the following two conditions:

- has paid or been credited with contributions for a minimum of 60 months of which the contributions must have been paid for at least 12 months within the period of 36 months preceding the date of death, or

- has paid or been credited with contributions for a minimum of 180 months.

To whom payable — as per the beneficiaries' chart given in Table 3.16.

Table 3.16: Basis for distribution of family pensions, grants and gratuities

Pension entitlement				Shares in pension			
Widow or widows	**Sons or daughters**	**Father, mother or parents**	**Brother of brothers, sister or sisters**	**Widow or widows or widower**	**Sons or daughters**	**Father, mother or parents**	**Brother of brothers, sister or sisters**
Widow or widows	One or more	-	-	½	½	-	-
Widow or widows or widower	-	Either or both of them	-	¾	-	¼	-
Widow or widows or widower	-		Brother, sister or more	¾	-	-	¼
Widow or widows or widower	-	-	-	The whole pension	-	-	-
Widow or widows or widower	One or more	Either or both of them	Brother, sister or more	3/8	3/8	¼	-
-	One or more	-	-	-	The whole pension	-	-
-	One or more	Either or both of them	One or more	-	¾	¼	-
-	One or more	-	One or more	-	¾	-	¼
-	-	Either or both of them	-	-	-	¾	-
-	-	Either or both of them	One or more	-	-	¾	¼
-	-	-	One or more	-	-	-	¾

Benefits payable — these will be determined after adding SICs, as in the case of invalidity and will be as follows:

- Pension — If at least 180 monthly contributions have been paid or credited (including the SICs), a pension determined as in the case of the old-age pension would be payable. If less than 180 monthly contributions have been paid or credited, then the rate of monthly pension payable shall be 30 per cent of the monthly pensionable salary.

- Lump sum — This is the benefit payable to the survivors of a deceased member who has paid at least 12 monthly contributions but is not entitled to a survivors' pension and the lump sum is equal to three times the final pensionable monthly salary for each 12 contributions paid or credited.

5.3. Recommended minimum pension

Ideally, the level of the minimum pension of a social insurance scheme should be related to the average IE of the Fund. The current practice is for the Government to fix the level in an arbitrary manner. As the level of the current IE is low, it became evident that linking the minimum pension to a reasonable percentage of the average IE (say, 50 per cent) would result in lower minimum pensions. However, adopting this basis may be considered at a future date after the contribution base is widened.

In the projections the minimum pension assumed as at 1 January 2003 is 6,000 SD (which is the expected minimum pension of the PSPF) but alternative levels of minimum pension are necessary to contain the initial costs of the common scheme. However, it is recommended that the minimum pension of the common scheme be revalued annually based on the rate of increase of IE of the common scheme in the preceding calendar year, provided the average rate of return on the reserves of the Fund has exceeded the average rate of increase of IE by at least 2 percentage points. If the difference is less than two percentage points but is still positive, then the increase should be restricted to 80 per cent of the rate of increase of the average earnings.

5.4. Recommended indexation of contributory earnings ceiling and benefits

In the two existing schemes there is no ceiling either on IE or on pensionable salary. Certain private-sector employees are suspected of having inflated IE just before retirement to obtain higher pensions. In order to minimize the risk of manipulation of earnings, it is recommended that under the common scheme a ceiling be placed on both IE and pensionable salaries. Until the next actuarial valuation, this may be fixed at 500,000 SD. (It is understood that very few individuals had higher IE as at 31 December 2002). However, this ceiling may be raised once in, say, three years on completion of periodical actuarial reviews.

5.5. Demographic and financial projections according to recommended benefit provisions

The financial implications of introducing the common scheme were examined by conducting actuarial projections of the expected benefit payments and contribution income as per certain assumptions (see section 5.5.2 below) over a period of 50 years, assuming that the common scheme would be introduced with effect from 1 January 2003.

Separate projections were made for each of the public- and private-sector members of the NSIF and for the members of the PSPF. Later these three categories were combined and another projection was made for the whole combined group. The inactive members of the NSIF were not included in the projections, but the reserve attributed to them (3,000 Mn. SD) was allocated for payment of benefits to them whenever the need arose.

5.5.1. Database used

For the projections of the common scheme, the databases used were the same as those used in NSIF and PSPF actuarial valuations. It is important to keep in mind, however, that the data given by the two organisations to evaluate their financial status were for samples of the membership and not for the whole population of each institution. As many inconsistencies were observed in the data, the data were adjusted and smoothed out to arrive at the databases

5.5.2. Assumptions made

The actuarial assumptions made in the actuarial study of the common scheme are given in Table 3.14 (see section 3.44).

Some of the key assumptions (such as future rates of increase of IE, rates of returns on investments, level of the minimum pension and rates of increase of pensions) adopted were those suggested by NSIF and PSPF officials.

NSIF and PSPF initial reserves were assumed to be 23,000 Mn. SD (the reserves attributed to actives of NSIF) and 33,614 Mn. SD, respectively, for a combined reserve of 56,614 Mn. SD.

It has been further assumed that:

- The Government will meet all liabilities vested on it in respect of current beneficiaries (and their prospective survivors) of the PSPF. All other liabilities (other than special benefits – see below) will be met by the common fund;
- liabilities in respect of future beneficiaries (of the present NSIF and the PSPF) will be met according to provisions of the common scheme and from the common Fund (that means the Government and the Fund will not share the benefit payments in respect of new beneficiaries of the PSPF by taking into account the period of service before 1 July 1994);
- administrative expenses will be reduced to 10 per cent of scheme contribution income, or to 2.50 per cent of total IE;
- special benefits now being paid by PSPF and NSIF – such as end-of-service gratuities, pensions on early retirement due to termination of service by Ministerial Directives, and so on, will be henceforth paid by the Government from general revenue and not from the reserve/contributions made to the common scheme,
- future insured salary escalation rates (per cent) per annum from the year 2003 onwards will be:
    - public-sector employees 10, 10, 8, 6, 6, 5 thereafter,
    - private-sector employees 10, 8, 6, 6, 6, 6 thereafter.

In the projections it has been assumed that under the proposed common scheme, the minimum pension of all categories will be raised to 6000 SD with effect from 1 January 2003 and that thereafter all pensions – including the minimum pension – will be increased annually at the same rates. It has been assumed also that rates of pension increases will be 20 per cent, 15 per cent, 10 per cent, 8 per cent, and 5 per cent per annum thereafter.

This implies that during the first four years, the rates of increase of pensions are higher than the expected rates of increase of IE.

5.5.3. Results of the projections

5.5.3.1. Demographic projections

The results are given in Table 3.17.

This table also shows the number of active members, different categories of pensioners and recipients of lump sums at single and quinquennial intervals during the next 50 years. Column 9 indicates the ratios (per cent) of the number of old-age pensioners to the number of active-insured pensions (pension dependency ratios). It shows that the ratio increases from 13.30 per cent in the year 2003 to 54.87 per cent in the year 2033 and then reduces to 52.26 per cent by the year 2052.

5.5.3.2. Financial projections

The relevant results are given in Table 318.

This table shows at single and quinquennial intervals, the expected amount of IE and the amount of benefits expected to be paid to different categories of beneficiaries in future.

Column 11 indicates the ratios (per cent) of the average of old-age pensions-in-payment to average of IE – replacement ratios.

It is indicated that for old-age pensions the replacement ratio increases from 41.76 per cent in the year 2003 to 54.12 per cent in the year 2008 and then gradually reduces to 47.00 per cent by the year 2052. However, it should be noted that in the projections it has been assumed that one-third of the initial pension is commuted and therefore only two-thirds is subject to revaluation at assumed rates.

The contribution rates required for financing the pension benefits of the common scheme under the following two financial systems were estimated on the basis of the results of the projections:

- General average premium (GAP) system,
- Single premium (SP) rate system.

Estimated net contribution rates (without any loading for administration expenses) in respect of various sectors under the proposed scheme, for the set of assumptions made regarding the level of the minimum pension and rates of revaluation of pensions, are given in Table 3.19.

Table 3.17: Common scheme – Demographic projections

Year	Active-insured members	Pensioners			Recipients of lump-sum payments		Total number of pensioners	Per cent of old-age pensioners to active members
		Retired	Invalids	Widows/ widowers	Retired	Others		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2003	698,990	92,960	2,834	24,013	818	23	119,807	13.30
2004	707,419	103,833	3,374	28,048	768	36	135,255	14.68
2005	714,299	115,629	3,920	32,062	1,177	43	151,611	16.19
2006	720,015	126,351	4,468	36,040	1,122	55	166,859	17.55
2007	723,492	139,294	5,017	39,950	644	67	184,261	19.25
2008	726,991	150,671	5,568	43,939	846	81	200,178	20.73
2013	744,967	202,170	7,623	64,009	1,257	73	273,802	27.14
2018	763,746	266,335	11,871	82,912	2,278	87	361,118	34.87
2023	783,397	357,416	14,513	99,016	2,183	115	470,945	45.62
2028	804,039	410,150	16,527	111,609	3,080	109	538,286	51.01
2033	825,659	453,020	17,898	120,604	3,247	118	591,522	54.87
2038	848,344	459,088	18,905	125,764	3,286	111	603,757	54.12
2043	872,149	457,673	19,811	127,514	3,256	106	604,998	52.48
2048	897,167	466,301	20,636	126,248	3,016	113	613,185	51.97
2052	918,113	479,790	21,228	123,778	3,094	121	624,796	52.26

Table 3.18: Common scheme – Financial projections (cont'd.)

Year	Annual IE	Annual pensions			Lump sums		Commuted pension, etc.	Average annual		% of average old-age pension to average IE
		Retired	Invalids	Widows/ widowers	Retired	Others		IE	Old-age pension	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
2003	86,569	4,807	151	1,302	1,405	13	8,035	.1238	.0517	41.76
2004	95,965	6,549	227	1,887	1,492	16	5,224	.1357	.0631	46.50
2005	104,184	8,452	315	2,540	1,561	19	4,909	.1459	.0731	50.10
2006	111,477	10,227	407	3,203	1,473	23	5,821	.1548	.0809	52.26
2007	118,856	12,271	505	3,896	1,305	31	6,489	.1643	.0881	53.62
2008	125,899	13,997	602	4,565	1,339	39	7,288	.1732	.0929	53.64
2013	168,062	24,678	1,267	8,874	2,022	44	10,737	.2256	.1221	54.12
2018	224,725	41,199	2,308	15,077	5,566	69	22,502	.2942	.1547	52.58
2023	301,028	70,770	3,692	23,445	6,743	123	41,235	.3843	.1980	51.52
2028	404,012	104,947	5,478	34,255	12,964	173	44,235	.5025	.2559	50.93
2033	543,245	150,842	7,661	47,890	20,212	230	53,733	.6580	.3330	50.61
2038	731,892	197,448	10,420	64,564	28,930	285	55,654	.8627	.4301	49.86
2043	988,016	252,782	14,101	84,821	39,242	358	79,330	1.1329	.5523	48.75
2048	1,336,518	331,473	19,040	109,092	48,927	504	119,999	1.4897	.7109	47.72
2052	1,704,516	418,603	24,153	132,101	62,189	673	161,114	1.8565	.8725	47.00

Table 3.19: Common scheme – Estimated net contribution rates (in SD)

Year		2003	2004	2005	2006	2007	2008	2009
Minimum pension amount for all categories on 1 January of year		6,000	7,200	8,280	9,108	9,837	10,328	10,845
Rate of increase of minimum pension on 1 January of year (%)			20.0	15.0	10.0	8.0	5.0	5.0 thereafter
Rate of increase of other pensions on 1 January of year (%		0.0	20.0	15.0	10.0	8.0	5.0	5.0 thereafter
Required contribution rates for combined group (%)			NSIF Public sector		NSIF Private sector		PSPF	
GAP 50 years	40.67		85.95		34.32		35.64	
SP – 25 years	32.69		71.20		25.71		28.38	
SP – 20 years	28.93		64.56		22.22		24.87	

This shows that contribution rates required to finance the pension benefits of the common scheme as a whole are as follows:

- GAP rate for 50 years = 40.67 per cent of IE;
- SP rate for 25 years = 32.69 per cent of IE,
- SP rate for 20 years = 28.93 per cent of IE.

Thus it is evident that the SP rate for a period of equilibrium of 20 years, with a provision for expenses of 2.50 per cent of IE (this is the recommended provision for administration expenses of the common scheme) is 31.43 per cent of IE. This is far more than the 24.25 per cent of IE available in the present contribution rate for the financing of pension benefits. It is assumed that 0.75 per cent of IE would be adequate to finance the EIB.

Pay rates vary between 22.82 per cent and 54.72 per cent, the rate in the year 2052 being 49.40 per cent.

The development of the reserves under the Pensions branch of the proposed scheme with a contribution rate of 24.25 per cent is shown in Table 3.20. The reserve begins to decline after the year 2012 and the reserve is depleted by the year 2019.

Table 3.20: Common scheme – Development of the reserve when the joint contribution in respect of Pensions branch is assumed to be 24.25 per cent of IE (in Mn. SD).
Initial Reserve = 53,614 Mn. SD; assumed interest rates (%) = 10, 10, 10, 8, 7, 7 per annum thereafter

Year	Contributions	Investment income	Benefits	Administrative expenses	Fund at year-end
2003	20,993	5,723	15,712	4,040	63,578
2004	23,272	6,550	15,396	4,037	73,967
2005	25,265	7,574	17,797	3,913	85,096
2006	27,033	6,896	21,154	3,698	94,173
2007	28,822	6,624	24,478	3,423	101,717
2008	30,530	7,107	27,829	3,075	108,452
2009	32,342	7,624	31,012	3,260	114,046
2010	34,263	7,866	34,168	3,457	118,550
2011	36,301	8,094	38,467	3,667	120,810
2012	38,462	8,176	42,601	3,889	120,759
2013	40,755	8,082	47,622	4,125	118,048
2014	43,187	7,629	56,930	4,375	107,560
2015	45,768	6,882	59,607	4,642	95,960

The projected revenue and expenditure are shown in Table 37.

This scheme is so expensive due to high pension accrual rates, and the assumptions made (at the request of NSIF and PSPF officials) about future rates of pension increases.

Table 37 Common scheme - Projected revenue and expenditure (figure in Mn. SD)

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1. REVENUE	26,716	29,822	32,839	33,928	35,446	37,637	39,866	42,129	44,395	46,658	48,837	50,816	52,650
Insurable Earnings	86,569	95,965	104,184	111,477	118,856	125,899	133,368	141,290	149,693	158,607	168,062	178,089	188,735
1.1 Contirbution income	20,993	23,272	25,265	27,033	28,822	30,530	32,342	34,263	36,301	38,482	40,755	43,187	45,768
1.2 Investment income	5,723	6,550	7,574	6,895	6,624	7,107	7,524	7,866	8,094	8,176	8,082	7,629	6,882
Contribution rate	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%
2. EXPENDITURE	**19,753**	**19,432**	**21,708**	**24,850**	**27,900**	**30,905**	**34,272**	**37,626**	**42,134**	**46,490**	**51,747**	**61,304**	**64,249**
2.1 Benefits	**15,713**	**15,395**	**17,795**	**21,154**	**24,477**	**27,830**	**31,012**	**34,169**	**38,467**	**42,601**	**47,622**	**56,929**	**59,607**
2.2 Pensions	**6,260**	**8,663**	**11,307**	**13,837**	**16,652**	**19,164**	**21,866**	**24,631**	**28,026**	**31,359**	**34,819**	**39,012**	**43,098**
Old age & Invalidity	4,807	6,549	8,452	10,227	12,251	13,997	15,864	17,717	20,123	22,381	24,678	27,615	30,353
Public	1,720	2,311	3,017	3,733	4,465	5,130	5,825	6,550	7,295	8,077	8,898	9,761	10,666
Private	1,015	1,225	1,431	1,626	1,825	2,005	2,217	2,465	2,746	3,096	3,506	3,987	4,555
PSPF	2,072	3,013	4,004	4,868	5,961	6,862	7,822	8,702	10,082	11,208	12,274	13,867	15,132
Invalidity	151	227	315	407	505	602	708	828	960	1,106	1,267	1,444	1,637
Public	77	105	136	166	197	225	255	287	322	359	398	441	486
Private	51	69	90	111	134	157	182	211	243	279	320	365	415
PSPF	23	53	89	130	174	220	271	330	395	468	549	638	736
Supervisors	1,302	1,887	2,540	3,203	3,896	4,565	5,294	6,086	6,943	7,872	8,874	9,953	11,108
Public	581	796	1,030	1,260	1,495	1,712	1,945	2,195	2,462	2,746	3,049	3,371	3,711
Private	395	545	709	872	1,043	1,206	1,385	1,583	1,801	2,041	2,303	2,590	2,903
PSPF	326	546	801	1,071	1,358	1,647	1,964	2,308	2,680	3,085	3,522	3,992	4,494
2.3 Grants	**9,453**	**6,732**	**6,488**	**7,317**	**7,825**	**8,666**	**9,146**	**9,538**	**10,441**	**11,242**	**12,803**	**17,917**	**16,509**
Old age commuted pension	8,035	5,224	4,909	5,821	6,489	7,288	7,849	8,159	8,444	9,561	10,737	15,384	13,375
Public	578	577	817	933	1,036	1,135	1,231	1,330	1,429	1,547	1,671	1,813	1,963
Private	411	234	381	574	752	950	1,208	1,483	1,776	2,287	2,727	3,259	3,891
PSPF	7,046	4,413	3,711	4,314	4,701	5,203	5,410	5,346	5,239	5,727	6,339	10,312	7,521
Grants	1,418	1,508	1,579	1,496	1,336	1,378	1,297	1,379	1,997	1,681	2,066	2,533	3,134
Public	357	252	125	93	76	75	93	129	191	271	384	519	694
Private	1,059	1,250	1,414	1,342	1,243	1,239	1,133	1,051	1,579	1,310	1,558	1,883	2,223
PSPF	2	6	40	61	17	64	71	199	227	100	124	131	217
2.4 Administrative cost	**4,040**	**4,037**	**3,913**	**3,696**	**3,423**	**3,075**	**3,260**	**3,457**	**3,667**	**3,889**	**4,125**	**4,375**	**4,642**
Balance without interest	1,240	3,840	3,557	2,183	922	-375	-1,930	-3,363	-5,833	-8,008	-10,992	-18,117	-18,481
3. Balance with Interest	**6,963**	**10,390**	**11,131**	**9,078**	**7,546**	**6,732**	**5,594**	**4,503**	**2,261**	**168**	**-2,910**	**-10,488**	**-11,599**
Reserve at beginning of year period	56614	63,577	73,967	85,098	94,176	101,722	108,454	114,048	118,551	120,812	120,980	118,070	107,582
Reserve transferred to PSPF	-	-	-	-	-	-	-	-	-	-	-	-	-
4. Reserve at year end 56,614	63,577	73,967	85,098	94,176	101,722	108,454	114,048	118,551	120,812	120,980	118,070	107,582	95,983

Table 37 Common scheme - Projected revenue and expenditure (figure in Mn. SD)

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
1. REVENUE	52,354	55,755	56,785	57,323	57,330	56,831	55,624	53,532	50,982	48,014	44,359	39,817	34,149
Insurable Earnings	200,027	212,010	224,725	238,222	252,547	267,755	283,892	301,028	319,236	338,559	359,080	380,869	404,012
1.1 Contirbution income	46,506	51,413	54,496	57,769	61,243	64,930	68,844	72,999	77,415	82,100	87,077	92,361	97,973
1.2 Investment income	5,848	4,342	2,289	-446	-3,913	-8,099	-13,220	-19,467	-26,433	-34,086	-42,718	-52,544	-63,824
Contribution rate	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%
2. EXPENDITURE	**73,351**	**81,134**	**92,266**	**102,728**	**114,461**	**123,519**	**140,413**	**153,451**	**157,022**	**168,302**	**179,323**	**195,406**	**212,108**
2.1 Benefits	**68,426**	**75,909**	**86,722**	**96,845**	**108,217**	**116,892**	**133,379**	**145,984**	**149,095**	**159,886**	**170,387**	**185,917**	**202,031**
2.2 Pensions	**47,762**	**52,781**	**58,584**	**65,007**	**72,144**	**79,810**	**88,566**	**97,885**	**106,517**	**115,389**	**124,327**	**134,137**	**144,660**
Old age & Invalidity	33,569	37,043	41,199	45,873	51,163	56,879	63,584	70,770	77,108	83,591	90,013	97,178	104,947
Public	11,620	12,661	13,801	15,049	16,413	17,908	19,411	20,917	22,422	23,924	25,414	26,961	28,572
Private	5,217	6,012	6,963	8,092	9,425	10,968	12,584	14,269	16,020	17,831	19,736	21,878	24,277
PSPF	16,732	18,370	20,435	22,732	25,325	28,003	31,589	35,584	38,666	41,836	44,863	48,339	52,098
Invalidity	1,846	2,069	2,308	2,560	2,825	3,101	3,390	3,672	4,015	4,354	4,713	5,088	5,478
Public	534	584	637	692	749	809	871	935	1,003	1,073	1,147	1,224	1,304
Private	470	529	594	662	735	813	897	966	1,083	1,186	1,296	1,413	1,536
PSPF	842	956	1,077	1,206	1,341	1,479	1,622	1,771	1,929	2,095	2,270	2,451	2,638
Supervisors	12,347	13,669	15,077	16,574	18,156	19,830	21,592	23,443	25,394	27,444	29,601	31,871	34,235
Public	4,071	4,451	4,850	5,269	5,707	6,165	6,643	7,140	7,659	8,199	8,761	9,346	9,953
Private	3,244	3,613	4,013	4,445	4,908	5,406	5,938	6,507	7,116	7,766	8,460	9,200	9,967
PSPF	5,032	5,605	6,214	6,860	7,541	8,259	9,011	9,796	10,619	11,479	12,380	13,325	14,315
2.3 Grants	**20,664**	**23,128**	**28,138**	**31,838**	**36,073**	**37,082**	**44,813**	**48,099**	**42,578**	**44,497**	**46,060**	**51,780**	**57,371**
Old age commuted pension	16,174	18,033	22,502	25,710	29,492	31,656	38,737	41,235	34,617	35,301	34,865	40,076	44,235
Public	2,121	2,379	2,669	2,991	3,348	3,672	3,672	3,702	3,725	3,737	3,799	4,017	4,259
Private	4,550	5,514	6,614	7,859	9,278	10,667	11,012	11,346	11,648	11,926	12,499	14,136	15,980
PSPF	9,503	10,140	13,219	14,860	16,866	17,317	24,053	26,187	19,244	19,638	18,567	21,923	23,996
Grants	4,490	5,095	5,636	6,128	6,581	5,426	6,076	6,864	7,961	9,196	11,195	11,704	13,136
Public	921	1,024	1,089	1,141	1,192	1,073	1,180	1,299	1,431	1,575	1,730	1,859	1,991
Private	3,235	3,731	4,189	4,606	5,004	3,677	4,324	5,107	6,027	7,054	8,283	9,171	10,145
PSPF	334	340	358	381	385	676	572	458	503	567	1,182	674	1,000
2.4 Administrative cost	**4,925**	**5,225**	**5,544**	**5,883**	**6,244**	**6,627**	**7,034**	**7,467**	**7,927**	**8,416**	**8,936**	**9,489**	**10,077**
Balance without interest	-26,845	-29,721	-37,770	-44,959	-53,218	-58,589	-71,569	-80,452	-79,607	-86,202	-92,246	-103,045	-114,135
3. Balance with Interest	**-20,997**	**-25,379**	**-35,481**	**-45,405**	**-57,131**	**-66,688**	**-84,789**	**-99,919**	**-106,040**	**-120,288**	**-134,964**	**-155,589**	**-177,959**
Reserve at beginning of year period	95,983	74,986	49,607	14,126	-31,279	-88,410	-155,098	-239,887	-339,806	-445,846	-566,134	-701,098	-856,687
Reserve transferred to PSPF	-	-	-	-	-	-	-	-	-	-	-	-	-
4. Reserve at year end	74,986	49,607	14,126	-31,279	-88,410	-155,098	-239,887	-339,806	-445,846	-566,134	-701,098	-856,687	-1,034,646

Table 37 Common scheme - Projected revenue and expenditure (figure in Mn. SD)

Year	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
1. REVENUE	18,966	9,383	-1,605	-13,970	-27,713	-42,955	-59,742	-78,230	-98,676	-121,297	-140,280	-173,813	-204,190
Insurable Earnings	454,707	482,451	511,924	543,245	576,524	611,890	649,478	689,428	731,892	777,034	825,027	876,055	930,314
1.1 Contirbution income	110,266	116,994	124,142	131,737	139,807	148,383	157,498	167,186	177,484	188,431	200,069	212,443	225,601
1.2 Investment income	-91,300	-107,611	-125,747	-145,707	-167,520	-191,338	-217,240	-245,416	-276,160	-309,728	-340,349	-386,256	-429,791
Contribution rate	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%	24.30%
2. EXPENDITURE	**247,079**	**263,613**	**280,481**	**294,197**	**309,151**	**324,529**	**338,739**	**356,474**	**375,771**	**396,905**	**418,470**	**441,509**	**467,885**
2.1 Benefits	**235,712**	**251,538**	**267,654**	**280,569**	**294,671**	**309,143**	**322,389**	**339,097**	**357,302**	**377,274**	**397,601**	**419,322**	**444,296**
2.2 Pensions	**168,152**	**180,660**	**193,559**	**206,393**	**219,302**	**232,327**	**245,279**	**258,617**	**272,432**	**286,851**	**301,821**	**317,417**	**334,013**
Old age & Invalidity	122,482	131,830	141,436	150,842	160,178	169,481	178,554	187,848	197,448	207,468	217,853	228,666	240,281
Public	32,022	33,889	35,781	37,700	39,646	41,620	43,617	45,724	47,937	50,253	52,686	55,171	57,837
Private	29,983	33,323	36,702	40,090	43,452	46,750	49,979	53,325	56,771	60,297	63,882	67,533	71,479
PSPF	60,477	64,618	68,953	73,052	77,080	81,111	84,958	88,799	92,740	96,918	101,285	105,962	110,965
Invalidity	6,303	6,738	7,189	7,661	8,156	8,676	9,225	9,806	10,420	11,073	11,765	12,499	13,276
Public	1,474	1,563	1,656	1,753	1,853	1,958	2,067	2,181	2,299	2,424	2,554	2,690	2,832
Private	1,795	1,932	2,074	2,222	2,379	2,544	2,719	2,905	3,104	3,317	3,547	3,794	4,059
PSPF	3,034	3,243	3,459	3,686	3,924	4,174	4,439	4,720	5,017	5,332	5,664	6,015	6,385
Supervisors	39,367	42,092	44,934	47,890	50,968	54,170	57,500	60,963	64,564	68,310	72,203	76,252	80,456
Public	11,239	11,917	12,619	13,343	14,090	14,860	15,652	16,466	17,303	18,164	19,048	19,958	20,891
Private	11,708	12,641	13,624	14,657	15,743	16,884	18,083	19,343	20,667	22,060	23,523	25,062	26,679
PSPF	16,420	17,534	18,691	19,890	21,135	22,426	23,765	25,154	26,594	28,086	29,632	31,232	32,886
2.3 Grants	**67,560**	**70,878**	**74,095**	**74,176**	**75,369**	**76,816**	**77,110**	**80,480**	**84,870**	**90,423**	**95,780**	**101,905**	**110,283**
Old age commuted pension	52,132	54,188	55,539	53,733	53,099	52,799	51,285	53,072	55,654	59,180	62,341	66,183	72,592
Public	4,841	5,150	5,238	5,311	5,364	5,394	5,451	5,788	6,107	6,398	6,656	6,896	7,409
Private	20,415	22,672	22,721	22,598	22,288	21,753	21,288	22,352	23,337	24,219	24,987	25,870	28,581
PSPF	26,876	26,366	27,580	25,824	25,447	25,652	24,546	24,932	26,210	28,563	30,698	33,417	36,602
Grants	15,428	16,690	18,556	20,443	22,270	24,017	25,825	27,408	29,216	31,243	33,439	35,722	37,691
Public	2,246	2,355	2,491	2,607	2,712	2,818	2,938	3,029	3,146	3,288	3,446	3,612	3,740
Private	12,256	13,303	14,910	16,555	18,199	19,860	21,576	23,066	24,694	26,486	28,428	30,473	32,267
PSPF	926	1,032	1,155	1,281	1,359	1,339	1,311	1,313	1,376	1,469	1,565	1,637	1,684
2.4 Administrative cost	**11,367**	**12,075**	**12,827**	**13,628**	**14,480**	**15,386**	**16,350**	**17,377**	**18,469**	**19,631**	**20,869**	**22,187**	**23,589**
Balance without interest	-136,813	-146,619	-156,339	-162,460	-169,344	-176,146	-181,241	-189,288	-198,287	-208,474	-218,401	-229,066	-242,284
3. Balance with Interest	**-228,113**	**-254,230**	**-282,086**	**-308,167**	**-336,864**	**-367,484**	**-398,481**	**-434,704**	**-474,447**	**-518,202**	**-558,750**	**-615,322**	**-672,075**
Reserve at beginning of year period	-1,038,957	-1,267,070	-1,521,300	-1,803,386	-2,111,553	-2,448,417	-2,815,901	-3,214,382	-3,649,086	-4,123,533	-4,641,735	-5,200,485	-5,815,807
Reserve transferred to PSPF	-	-	-	-	-	-	-	-	-	-	-	-	-
4. Reserve at year end	-1,267,070	-1,521,300	-1,803,386	-2,111,553	-2,448,417	-2,815,901	-3,214,382	-3,649,086	-4,123,533	-4,641,735	-5,200,485	-5,815,807	-6,487,882

5.5.4. Sensitivity analysis

In order to estimate the extent to which estimated contribution rates are sensitive to assumptions made regarding future salary escalation rates and interest rates, projections were made with interest rates at 1 percentage point higher and 1 percentage point lower than those assumed for the Status Quo conditions, keeping the salary escalation rates unchanged. That is, with the GAP increased and decreased by 1 percentage point. The ensuing results are as follows:

- For higher GAP the required GAP rate of contribution for 50 years = 38.96 per cent,
- For lower GAP the required GAP rate of contribution for 50 years = 42.27 per cent.

Hence, it is evident that a higher GAP would reduce the contribution rate and vice versa

Alternate common schemes, where the level of minimum pensions/rates of increase of pensions, are different.

Since the contribution rates required to finance the proposed scheme even under the SP rate system are far above the present contribution rate of 24.75 per cent of IE (leaving 0.75 per cent of IE for financing of the EIB), the cost of financing a scheme was examined where the level of the minimum pension and the pension revaluation rates are different (lower) to those mentioned in sections 5.4 and 5.5.

The different costs and rates are illustrated in Alternatives 1 and 2.

Alternative 1

The NSIF minimum pension remains at 4,500 SD on 1 January 2003, increasing to 6,000 SD on 1 January 2004 and to 6,480 SD on 1 January 2005; thereafter all pensions (including the minimum pension) increase at 5 per cent per annum.

The PSPF minimum pension would remain at 6,000 SD on 1 January 2003 and 1 January 2004 and will go up to 6,480 SD on 1 January 2005; thereafter all pensions (including the minimum pension) will increase at 5 per cent per annum.

In other words, the NSIF and PSPF minimum pensions would be equal from 1 January 2005 onwards.

The required contribution rates in respect of the different sectors that would be insured under the common scheme are shown in Table 3.22. The required contribution rates (as a percentage of IE) in respect of the whole scheme are as follows:

- GAP rate for 50 years 36.34
- SP rate for 25 years 29.15
- SP rate for 20 years 25.75
- SP rate for 15 years 21.08.

Thus it is evident that the scheme would be now less expensive and could be financed with the present joint contribution rate of 25 per cent of IE, under the SP rate system of financing with a period of equilibrium of 15 years. The required gross contribution rate being 21.08 per cent + 2.50 per cent (for administrative expenses) + 0.75 per cent (for EIBs) = 24.33 per cent of IE.

Table 3.22: Alternate 1 Common scheme – Estimated contribution rates (in SD)

Year		2003	2004	2005	2006	2007	2008	2009
Minimum NSIF pension amount for all categories on 1 January of year		4,500	6,000	6,480	6804	7,144	7,501	7,876
Rate of increase of minimum NSIF pension on 1 January of year (%)			33.3	8.0	5.0	5.0	5.0	5.0 thereafter
Rate of increase of other NSIF pension on 1 January of year (%		0.0	0.0	8.0	5.0	5.0	5.0	5.0 thereafter
Minimum PSPF pension amount for all categories on 1 January of year		6,000	6,000	6,480	6804	7,144	7,501	7,876
Rate of increase of minimum PSPF pension on 1 January of year (%)			33.3	8.0	5.0	5.0	5.0	5.0 thereafter
Rate of increase of other PSPF pensions on 1 January of year (%		0.0	0.0	8.0	5.0	5.0	5.0	5.0 thereafter
Required contribution rates for combined group (%)			NSIF Public sector		NSIF Private sector		PSPF	
GAP 50 years	36.34		64.00		33.72		32.42	
SP – 25 years	29.15		53.73		24.58		26.59	
SP – 20 years	25.75		48.99		20.94		23.49	
SP – 15 years	21.08		42.55		16.52		18.95	

Alternative 2

Minimum pension = 4,800 SD on 1 January 2003

= 6,000 SD on 1 January 2004 and thereafter increases by 15 per cent, 10 per cent, 8 per cent, and 5 per cent per annum thereafter.

The other pensions increase by 20 per cent on 1 January 2004 and thereafter annually at 15 per cent, 10 per cent, 8 per cent, and 5 per cent per annum thereafter.

The required net contribution rates for financing of the pension benefits are as follows

- GAP rate for 50 years = 38.72 per cent
- SP rate for 25 years = 31.37 per cent
- SP rate for 20 years = 27.84 per cent.

The required contribution rates in respect of the different sectors that would be insured under the common scheme are shown in Table 3.23.

Table 3.23: Alternate 2 Common scheme – Estimated contribution rates (in SD)

Year	2003	2004	2005	2006	2007	2008	2009
Amount of minimum pension on 1 January of year	4,800	6,000	6,900	7,590	8,197	8,607	9,037
Rate of increase of the minimum pension on 1 January of year (%)		25.0	15.0	10.0	8.0	5.0	5.0 there-after
Rate of increase of the other pensions on 1 January (%)	0.0	20.0	15.0	10.0	8.0	5.0	5.0 there-after
Required contribution rate for the combined group (%)		NSIF Public-sector		NSIF Private-sector		PSPF	
GAP – 50 years	38.72	76.43		34.06		34.15	
SP – 25 years	31.37	64.58		25.43		27.73	
SP – 20 years	27.84	59.05		21.95		24.43	

Clearly, Alternative 2 scheme above is more expensive than Alternative 1 scheme.

The proposal and two alternatives are presented in the following table.

Table: 3.24 Common scheme alternatives

Common scheme	Proposed scheme	Alternate 1 scheme	Alternate 2 scheme
GAP for 50 years	40.67	36.34	38.72
SP for 25 years	32.69	29.15	31.37
SP for 20 years	28.93	25.75	27.84
SP for 15 years		21.08	

5.6. Recommended funding rule, financing system, contributory levels and transfers of funds

When introduced, the proposed common scheme would harmonize the NSIF and PSPF schemes. If the minimum pensions were, however, to be equalized on 1 January 2003 the scheme would become very expensive. Since it may be impractical to introduce the common scheme with effect from 1 January 2003, it is prudent to first introduce it (say, with effect from 1 January 2004) and equalize the minimum pensions with effect from 1 January 2005 as in Alternate 2 scheme.

Recommend:

- SC rate system of financing for financing of the long-term benefit branch, and
- System of Assessment of Constituent Capitals for financing of EIB.

It would appear that under the SP rate system of financing the contribution rate required for a period of equilibrium of 15 years would be 21.08 + 2.50 + 0.75 = 24.23 per cent of IE and this is within the present contribution level – that is, 25 per cent of IE.

It is imperative, however, that the Government should meet the liabilities vested on it in respect of current pensioners and survivors and also agree to meet the special benefits payable to the public-sector employees (these may be considered as special benefits payable by the employer as part of the service agreement and not as social insurance benefits that could be paid from the common Fund.)

It is further recommended that the contribution base should be widened so as to collect contributions on either gross earnings or on basic salaries plus additional allowances rather than the case at present. The pension formula needs to be adjusted if and when such widening of the contribution base is done and a suitable formula for this purpose is given below.

If and when the contribution base of the membership (that is, either or both the public-sector and private-sector employees or that of only one category of employees) were enlarged by inclusion of other allowances (that is, a change in the definition of IE), it would be necessary to amend the pension formula for the following reasons:

- the pension will be calculated on the enhanced IE of those members,
- the previous contributions have been made on lower levels of earnings.

The following simple formula is recommended for this purpose.

If the average level of IE of the concerned category of employees increases to “k” times the previous average level as a result of the revision of IE by the inclusion of new allowances, and so on. then the pension formula applicable to that category should be adjusted as follows when pension amounts and other benefits payable are based on new IE.

- n = number of months of contributions received before the change;
- m = number of months of contributions received on the enhanced earnings base;
- then the number of months that should be taken into account for computation of the benefit amount = (m + n/k)

The above simple formula has been suggested bearing in mind the need for a simplified benefit calculation.

The validity of the recommended contribution rate depends on the fulfilment of the following assumptions:

- the level of administration expenses will be brought down to around 2.5 per cent of IE within the next five years;
- the NSIF and PSPF will be merged when the common scheme is introduced and the initial reserve of the common Fund will be equal to the sum of the reserves of the two separate funds;
- funds will be judiciously invested so as to secure a rate of return on the whole Fund which will exceed both the rate of inflation and the rate of increase of average IE of the scheme by at least 2 percentage points.

Since the present actuarial study is based on sample data with many discrepancies, it is recommended that another valuation be conducted within three years of the introduction of the common scheme. Before such an investigation is initiated, the database should be corrected and updated, which should be done as soon as possible. Until then, it would be prudent to restrict the annual rate of revaluation of all pensions to 80 per cent of the rate of increase of average IE provided in the previous year the rate of return on the Fund has exceeded the rate of increase of IE. The revaluation of the minimum and/or other pensions does not take place.

5.7. Recommended investment policy and management

The investment of funds pertaining to the common scheme should be carried out in accordance with four basic principles governing the investment of social security funds, namely:

- Security — This means not only the nominal security (that is, preservation of the capital invested) but also the maintenance of the real value (that is, the purchasing power) of the investments.
- Yield — The invested funds should earn the highest possible return consistent with security. The real rate of return (which is the nominal rate less the rate of inflation) should be at least equal to the real interest rate assumed by the actuary to determine the contribution rate.
- Liquidity — This relates to the cash flow projections of income and expenditure of the scheme. Assets should be sufficiently liquid to meet scheme liabilities, if the need arises, and this normally happens when benefits are financed under the pay-as-you-go (PAYG) system of finance. When benefits are financed under the SP rate, GAP or the Assessment of Constituent Capitals system of finance, the need to do so may not arise and investments may be made in long-term securities.
- Social and Economic Utility — This means as far as possible the investments should be directed to projects which will improve the quality of life of the insured population in particular and the whole population in general. This objective can be achieved by investing, for example, in government-guaranteed loans for improvement of health and educational facilities; in development banks, which through enterprises create employment; and in agencies that develop housing.

Direct investment in such projects however are not recommended for social insurance funds as they require different expertise, and engagement in such ventures could divert the attention of the management of the social insurance scheme from the primary responsibility of providing social security protection to eligible persons. Indirect investment through shares, debentures and other financial instruments may be done after proper evaluations and subject to fulfilment of the criteria discussed below.

The investment policy of the Fund should be to earn the maximum return whilst conforming to basic principles. There, of course, may be conflict. Also, in general, it is necessary to follow a dynamic investment management (such as buying and selling shares and securities, rather than holding them to maturity, and so on) in order to make maximum profits from the movements in the capital market.

It is recommended that the Board of the social security fund should set the broad investment policy (e.g. how much to be invested in each type of investment) under the guidance of a competent investment committee (see below). The day-to-day handling of investments should be entrusted to investment/fund managers, but the committee should regularly and closely monitor their performance.

The investment committee should consist of, say, seven members and should include a professionally qualified accountant, a professional banker, a representative from the

Central Bank, and a representative from the Ministry of Finance. The committee members should be familiar with the capital market of the country and its operations.

At present the avenues of investment available in the country are very limited and there is no effective/strong equity market. Under these conditions, it has been suggested that investment in property/property development would provide a hedge (limited?) against inflation. However, it is not prudent to invest a large portion of the Fund in property (as is done now) as any downturn in rental levels would cause big financial strains on the Fund. Direct development of property (as done now) is also not considered appropriate for a social insurance fund as it could divert the attention of the management from the primary responsibility of provision of social security protection to all the eligible persons. Instead indirect investment through secured loans, shares debentures, and so on, could be done.

Considering the present status of the capital markets in the country, the following types of assets (within specified limits in amounts and percentages) in the following table are considered to be appropriate for the investment of the funds of the common scheme:

Table 3.25 Type and percentage of investments of the common scheme

Government (or government guaranteed);	% of Fund
Securities (including bonds, treasury bills) up to	100
Shares of companies listed in the stock exchange	25
Corporate debt including bonds, debentures, commercial paper backed by a licensed commercial bank or licensed specialized bank	30
Bank deposits with licensed commercial banks, or licensed specialized banks	30
Freehold or leasehold of land	15
Freehold or leasehold of buildings	15
Secured loans	10

In order to ensure that there is no concentration of risk, the investment in any one loan should not exceed 5 per cent of the Fund and the total deposits with any one bank should not exceed 10 per cent of the Fund. These limits may be revised as capital markets develop.

5.8. Recommended pooling of funds and accounting system

It is recommended that the two reserve funds be merged into one fund.

Separate accounts and reserves should be maintained for the two main branches of benefits namely the Pensions branch and the EIB in order to ensure that financial autonomy is preserved. This is necessary to be able to follow the development of each branch and analyse the financial situation separately as different financial systems have been recommended for the two branches.

Financial autonomy means that in the accounts all items of income and expenditure of each branch should be separated and no transfers permitted from one branch to the other.

For this purpose the contributions, administration expenses and income from investment in respect of the reserves have to be distributed as follows:

- determine the initial reserve for the EIB — this should be equal to the capital value of the EIB pensions payable as per the Table in Annex H;

  The initial reserve of the Pensions branch will be the difference between the assumed initial reserve of 56,614 Mn. SD and the above EIB reserve, plus the reserve corresponding to inactive members of the present NSIF;

- monthly income from contributions should be apportioned to the PSB and the EIB in the ratio of (24.25) to (0.75) – (assuming that the Government will not claim part of the normal contribution made by it to meet its liabilities - as under the alternative examined). If subsequent actuarial valuations recommend different contribution rates to the two branches then the division should be done in the ratio of those rates;

- investment income from the reserves should be apportioned according to the ratio of the reserves at the beginning of the year;

- administrative expenditure of the fund should be distributed in such a way that the proportion allocated to a branch shall be equal to the proportion which the sum of the contribution income and benefit expenditure shown in the income and expenditure account of that branch bears to the sum of the contribution income and benefit expenditure of the fund as a whole.

The following reserves should be constituted:

- pensions reserve, which should be constituted by transferring annually to the initial reserve mentioned above, the excess of income over expenditure of the Pensions Branch,

- disablement and death benefit reserve (for the EIB).

The income and expenditure account of the EIB would form the basis for building the disablement and death benefit reserve. This account will show the contribution income on the income side and the administration expenses and the capitalized value of claims awarded during the year on the expenditure side.

The capital values of periodically payable disablement and death benefits awarded in a year should be charged against the year's income in the Income and Expenditure account of the EIB, and should be credited to a current account which should be credited with the investment income of the said reserve and debited with the actual payments of the current periodical disablement and death benefits effected during the year, the balance being transferred at the end of the year to the EIB reserve.

Note that all periodical payments should be effected from the reserve created and not charged to the Income and Expenditure account of the EIB.

5.9. Annual summary of accounts

At the end of each financial year the accounts as a whole should be balanced and the following summary accounts should be prepared:

- consolidated income and expenditure account for the fund as a whole;

- income and expenditure account in respect of each branch;

- balance sheet for the whole fund.

Annex A. Salient features of NSIF pension scheme and employment injury benefit scheme

A1. NSIF pension scheme

1. Normal Retirement Age (NRA) = 60 for males, = 55 for females;
2. Early retirement ages = 45 years or more except on ministerial terminations where retirement below 45 years is allowed. However in order to receive a pension, contributions should have been made for 12 years or more;
3. Insured monthly salary = basic monthly salary plus the cost of living allowance; and the nature of work allowance;
4. Monthly salary on which the pension amount is calculated = average insured monthly salary during the preceding 12 months (AIMS);
5. Pension accrual rate for 12 months of contributions = (1/50) the of final AIMS;
6. Amount of old age pension payable monthly at NRA = OAP:
   - where OAP = 1/50 x 1/12 x (number of months of contributions) x (AIMS),
   - provided the number of months of contributions is ≥ 144,
   - if the number of months of contributions is < 144, only a lump sum equal to 75 per cent of all contributions will be paid;
7. Minimum monthly pension = 4,000 SD on 31.12.2002;
8. Maximum rate of pension = 75 per cent of (AIMS);
9. Amount of old age pension payable monthly on Early retirement at age 'X' = (ERP) x
   - Where (ERP) x = (Kx) (1/50) (1/12) (number of months of contributions) (AIMS)
   - Where: Kx = 0.80 when x < 50,

     K_x = 0.85 when 50 ≤ x < 55,

     K_x = 0.90 when 55 ≤ x < 60;

   If the number of months of contributions is < 144 only a lump sum equal to 75 per cent of all contributions will be paid;
10. Invalidity pension: paid when the insured is totally and permanently disabled provided the insured *was an active* member at disablement;
11. Amount of invalidity pension payable to an active member:

    = 50 per cent of (AIMS) *or* (1/50) (1/12) (number of months of contributions) (AIMS) whichever is *higher;*
12. Invalidity benefit payable to an inactive pensioner on becoming disabled: pay lump sum equal to 75 per cent of all contributions paid;
13. Minimum qualifying condition to receive invalidity pension: should be an active person, but no minimum period of contribution is required;
14. Minimum monthly invalidity person = 4,000 SD on 31.12.2002;
15. Survivors' benefits:

    a) payable to survivors of a person who was active: pension;

    b) payable to survivors of a person who was inactive = lump sum;
16. Amount of benefit payable:

    a) for the survivors of a member who was active:
      - monthly pension equal to 50 per cent of the (AIMS) or
      - (1/50) (1/12) (number of months of contributions) (AIMS)

Whichever is higher

b) for survivors of a member who was inactive:

- lump sum equal to 75 per cent of all contributions;

17. Amount of benefit payable to the survivors of a pensioner: pay the full pension (including the commuted amount if the pension paid to the deceased was only 2/3 of entitlement);
18. Minimum amount of survivors pension = 4,000 SD on 31.12.2002;
19. To whom survivors benefits are payable and the ratio of division:- As per attached schedule given in Table 39;
20. For how long the survivor's pension would be payable; for widows, daughters – Until marriage; for a son – up to age 26 (maximum);
21. Commutation of old age pension and invalidity pension:

    1/3 of the monthly pension entitlement could be commuted to a lump sum as per a Table, where the Commutation factor depends on the age at which commutation is being made and 2/3rds of the entitled pension will be paid for specified period. The commuted portion of the pension is restored when the member dies or on earlier expiry of the stipulated period.
22. Benefits payable on resignation, forced termination, resignation on marriage:
    - lump sum equal to 75 per cent of all contributions,
    - on marriage – lump sum equal to 100% of contributions made.

A2. Employment-injury-benefits scheme

1. Qualifying period -Nil;
2. Total disablement benefits: 80 per cent of the average insured earnings will be paid as a pension for life;
3. Constant attendance allowance: additional 50 per cent of the pension in (2) above will be paid as a pension;
4. Partial disablement: pay a pension equal to (degree of disability) (pension in (2)) /100;
5. On death: 80 per cent of the average insured earnings will be paid as a pension to eligible survivors.
6. Minimum pension: on death and total disablement = 4,000 SD as at 31.12.2002.

   On partial disablement = (degree of disablement) (4,000 SD)/100 as at 31.12.2002.

Annex A1 Institutional and administrative review of the NSIF

The Ministry of Welfare and Social Development is responsible for the administration of both the National Social Insurance Fund (NSIF) and the Public Service Pension Fund (PSPF).

A single Board of Directors has responsibility for the management of both the NSIF and the PSPF.

The NSIF administration is structured on a two-tiered basis, with the headquarters at the national level, and the service-delivery offices at the local (or State) level. There are 26 service-delivery offices situated in 19 of 26 states; some states have multiple offices, while some in the south have no NSIF representation.

National level

The NSIF administration is headed by a General Manager responsible for day-to-day operations, and responsible to the governing Board of Directors.

The NSIF has two Assistant General Managers (AGMs), in charge of seven Directorates.

The AGM (Insurance Affairs) is responsible for the following Directorates:

- Beneficiaries and registration
- Social Insurance Offices
- Planning and Information Systems
- Central Inspection and Coordination
- External Sudanese Labour.

The AGM (Finance & Management) has responsibility for:

- Financial Affairs
- Management and Personnel.

In addition, four other units report directly to the General Manager; these are:

- Legal Department
- Real Estate Department
- Internal Audit
- Public Relations.

Registration and Technical Service Directorate

The Registration and Technical Services Directorate has two sections: the Department of Registration and Benefits (48 staff) and the Department of Pensioner Services (17 staff).

The Department of Registration and Benefits has two main functions:

- Recording and maintaining of registration records for employers and employees,
- Processing of claims for pensions.

Pensions

When an employee is due to retire, the employer sends a retirement advice to the local office supplying the required details of the retiree. To claim a pension, the retiree brings pertinent documents to the local office, and completes a pension claim form. The documents are checked, the claim is prepared, and then forwarded to the national office for processing. Local offices do not process claims, as they do not have access to contribution history records.

However, where a claimant requests an advance, the staff can estimate the pensioner's likely rate of contribution, and can make an advance from a special fund of up to 50 per cent of the pension due for the first three months.

The special fund is reimbursed monthly from the national office, subject to the submission and checking of documents.

The national office usually finalizes claims within four weeks.

Payments

Monthly pensioner payment lists are produced at the national level and delivered monthly to the local offices, and funding for the payments deposited into the local office bank account.

All payments are made in cash – there are no payments to bank accounts by direct deposit (evidently, the pensioners choose not to have direct deposits, due to fees charged by the banks). Cashiers at various locations as well as at the office effect payments.

The offices generally do not have any major problems with delays in pension payments.

Department of Pensioner Services

This department has two main functions:

- provides social assistance to existing pensioners and their dependents by way of allowances and medical services,
- pays the health insurance contributions for each pensioner to the Health Insurance Fund.

Social Insurance Offices Directorate

This Directorate has responsibility for all activities undertaken at the local level in the 35 NSIF operational offices located throughout Sudan (9 in Khartoum State and 26 amongst the other states) Each state does not have an office; some states have two and three offices while some in the south have no offices.

Local Offices

The main functions of the local offices are:

- registration of employers,
- registration of employees,
- collection of contributions,
- updating contribution records,
- receiving and preparing claims for pensions and other benefits,
- payment of pensions and benefits,
- ensuring compliance with registration and contribution obligations.

Planning and Informtion Systems Directorate

This Directorate has responsibility for the research, planning and reporting processes relating to the activities of the NSIF as well as the implementation of the NSIF information technology plan. In addition, it is responsible for the maintenance and support for all the computer hardware and software throughout the NSIF.

The Directorate divides its responsibilities between the Technical and Information Systems Department and the Planning, Research and Quality Department.

The Directorate of Financial Affairs

This Directorate has a single department, the Department of Financial Affairs, with 33 staff, the functions of which include:

- monitoring, recording and reporting details of all income and expenditure of the NSIF,
- control of all the finances of the NSIF,
- recording and management of all contributions,
- balancing all accounts with banks,
- preparation of the annual budget,
- presentation of final budget for audit,
- allocation of budget funds,
- control of investments.

Directorate for External Sudanese Labour

There are a large number of Sudanese who work abroad, mostly in the Middle East. This Directorate has responsibility for NSIF activities related to these workers, and to those who seek work abroad. The Directorate has two departments:

- Department of Promotions and Services
- Department of Technical Services

Annex A2 Institutional and administrative review of the PSPF

The Public Service Pension Fund (PSPF) administration, like the NSIF, is structured on a two-tiered basis – the headquarters at the national level, and the service-delivery offices at the local (or State) level. There are 19 service-delivery offices situated in 19 of 26 states; some states in the south have no PSPF office, due to the war.

The Director General of the PSPF, who reports to the Board of Directors, is responsible for administration and day-to-day operations of the PSPF, which is divided into five Directorates and six separate Departments.

The Director General takes direct responsibility for the management of:

- Investments Directorate,
- Legal Department,
- Internal Audit,
- Executive Office,
- Public Relations,
- Administrative Development Unit.

The Deputy Director General takes responsibility for the following four Directorates:

- Technical Planning and Information,
- Coordination of State offices,
- Khartoum State Office,
- Administration and Finance.

Technical, Planning and Information Directorate

The Directorate has a total of 38 staff (which includes two secretarial staff) allocated to four Units:

- Technical and Planning Affairs (8 staff),
- Information Technology (7 staff),
- Pensioners Affairs (15 staff),
- Records and Archive (6 staff).

Coordination of State Offices Directorate

The main responsibilities of this Directorate are:

- Supervision, coordination and follow-up on the performance of each of the 19 state offices;

- Ensure the successful implementation of the policies of the PSPF Fund;

- Monitor the plans, programmes and budgets of the offices, and ensure that their operational , financial and technical needs are met;

- Evaluate the performance and productivity of the state offices through regular inspections, to assist with and improve performance, and to provide performance reports to the General Manager;

- Follow-up on the collection of contributions.

Khartoum State Office Directorate

Khartoum State has its own special state administration, separate from other State Offices that are administered by the Coordination of State Offices Directorate, because of the large volume of contributors and pensioners – Khartoum has 65 per cent of the nation's total number of pensioners.

The main functions of the Khartoum State Office are:

- Collection and recording of employer contributions,

- Examination and approval of claims for pensions,

- Monthly payment of pensions,

- Preparation of the annual budget.

Administration and Finance Directorate

The Directorate of Administration and Finance has 48 staff and is responsible for:

- Monitoring the implementation of the financial policy and programme of the PSPF, and for the execution of the Fund's strategical plan,

- Coordination of the other Departments which implement the Fund's policies,

- Ensuring daily needs are met for the ongoing operations of the PSPF,

- Accounting for all sources of revenue and expenditure of the Fund.

Annex A3 Main functions of the NSIF and the PSPF

• Registration of employers	NSIF and PSIF
• Registration of employees	NSIF and PSIF[1]
• Collection of employer and employee contributions	NSIF and PSIF
• Recording of contributions – employers	NSIF and PSIF
• Recording of contributions – employees	NSIF and PSIF
• Processing of claims for pension	NSIF and PSIF
• Processing claims for social assistance	NSIF and PSIF
• Payment of monthly pensions	NSIF and PSIF
• Payment of other claims[2]	NSIF and PSIF
• Loans for pensioners	NSIF and PSPF
• Administration of local office operations	NSIF and PSPF
• Information technology[3]	NSIF and PSPF
• Financial management (all income and expenditure)	NSIF and PSPF
• Investments	NSIF and PSPF
• Personnel administration	NSIF and PSPF
• Payment of staff salaries	NSIF and PSPF
• Policy	NSIF and PSPF
• Planning	NSIF and PSPF
• Legal activities	NSIF and PSPF
• Audit	NSIF and PSPF
• Public Relations	NSIF and PSPF

1. Data collection under way.

2. Lump sum payments, social assistance, and so on.

3. Development of new systems, implementation of new systems, installation of national network.

Annex B PSPF-Salient features of the pension scheme

(1)	Normal retirement age	NRA = 60 years for males & females
(2)	Early Retirement Ages	50 years or should have 25 years of contributions (service) if it is earlier.
(3)	Definition of monthly salary for the purpose of paying contributions	Basic Salary + Cost of living allowance+ housing allowance
(4)	Definition of monthly salary for the purpose of calculating the pension amount	Last month's insured salary = LMIS
(5)	Pension Accrual Rate for 12 months contributions	(1/45)
(6)	Amount of old age pension and lump-sums payable at NRA – monthly	Monthly Pension = OAP where, If the number of months of contributions is equal to or greater than 144 (OAP) = (1/45) (1/12) (Number of months of contributions) (LMIS) <u>plus</u> lump-sum equal to 2 months' salary. If the number of months of contribution is < 144 only a lump-sum is payable and the lump sum is equal to a) two months' salary for each year of pensionable service when service is 3 years or less. b) two months' salary for each of the first 3 years and 4 months' salary for each year in excess of 3 and less than 12 years.
(7)	Minimum monthly (OAP) pension	4,800 SD as at 31.12.2002
(8)	Maximum rate of (OAP) pension	(5/6) (LIMS) If service is > 450 months pay in addition to the lump-sum benefit in (6) above, a further lump-sum equal to two months' salary for each year in excess of 37.5 years
(9)	Amount of old age pension payable monthly on early retirement at age 'x'	$(ERP)_x$ where, $(ERP)_x$ = (1/45) (1/12) (Number of months of contributions) (LIMS) If the number of months of contribution is < 144, pay lump-sum as mentioned in (7) above
(10)	Qualifying conditions for Pensions on retirement	a) Minimum 144 months of contributions, and b) Retirement age 50 or over, or c) Has completed 25 years of contributions
(11)	Invalidity Pension	Paid when the insured member is totally and permanently disabled
(12)	Benefit payable to an Invalid	Contributions < 144 months pay lump-sum equal to 2 months' salary for each year of service when the period of service is 3 years or less two months' salary for the first 3 years and 4 months salary for each year in excess of 3 years Contributions ≥ 144 – pay pension calculated in the normal way i.e. (1/45) (1/12) (Number of months of

		contribution) (LIMS) plus Lump-sum equal to two months' salary.
(13)	Maximum monthly invalidity pension	(5/6) (LIMS) If service > 450 months, i.e. 37.5 years, pay in addition a lump-sum equal to two months' salary for each year in excess of 37.5 years
(14)	Minimum invalidity pension	4,800 SD as at 31.12.2002
(15)	Benefits payable on resignation	a) Lump-sum equal to total contributions paid if period of service < 2 years b) Lump-sum equal to 1½ months' salary for each year of first 7 years service and two months' salary for each year in excess of seven years up to 15 years c) Lump-sum equal to 1½ months' salary for each year of the first 7 years service and two months for each year in excess of 7 years up to 15 years, and salary of 3 months for each year in excess of 15 years and less than 20 years. d) Pension equal to (0.90) (1/45) (1/12) (Number of months of Contributions) (LIMS) If service ≥ 20 years but < 25 years
(16)	Benefits payable on retirement due to cancellation of post	Pay pension as per the normal formula and lump-sums mentioned in (6) above, but the pensionable service of the officer should be increased by 1/4th of the period between age at the date of retirement and the date of attainment of age 60.
(17)	Commutation of pension	Up to (1/3rd) of the Pension can be commuted as per the Table. Then (2/3rd) Pension will be paid for 15 years or until earlier death.
(18)	Benefits payable on dismissal	(0.95) of the benefits given in (15) above.
(19)	Survivors benefits	a) Payable on death of an active member - If service ≥ 144 months, a pension calculated in the normal way - If service < 144 months, pay pension for 144 months Plus 4 months' salary in both cases b) ii) Payable on death of a Pensioner = Full pension that the pensioner was entitled to (before commutation)
(20)	To whom the benefits are payable and in what proportion	As per the chart in Table 39
(21)	For how long the pensions are payable to orphans	Son - Up to 21 years Daughter - Until marriage Widow - Until re-marriage

Annex C Main similarities and differences of the NSIF and the PSPF

		NSIF	PSPF
1)	Contingencies covered	Old age, invalidity, death Employment injury leading to disablement, death	Old age, invalidity, death Employment injury leading to disablement, death. The Scheme also provides for 'end of service' gratuities
2)	Normal retirement age	60 for males 55 for females	60 for both males and females
3)	Early retirement minimum age (with pension, etc.)	45 years – Pension is payable if contributions have been made for 144 months. Otherwise, pay 75% of <u>all</u> the contributions paid.	50 years - Lump-sum of two months' salary plus pension is payable provided 144 months contributions have been made. *<u>Or</u>* Even at earlier ages if 300 months' contributions have been made. Otherwise, lump-sum related to period of service is payable.
4)	Insured salary	Basic salary + cost-of-living (CLA) + nature-of-work allowance	Basic salary + CLA+ housing allowance
5)	Definition of pensionable salary	Average wage/salary on which last 12 months' contributions have been made	Last month's insured salary
6)	Rate of accrual of pension	(1/50th) for 12 months' contributions	(1/45) for 12 months' contribution
7)	Maximum rate of pension	75% of average insured salary during the preceding 12 months' contributory period	(5/6th) of last month's insured salary if 'service' is > 450 months pay a lump-sum equal to 2 months' salary for each year in excess of 37.5 years (450 months) in addition to the lump-sum of 2 months' salary normally payable
8)	Reduction of pension on early retirement	Pension amount determined according to the normal formula is reduced by 20% if retirement age x is > 50 years 15% if 50 ≤ x < 55 10% if 55 ≤ x < 60	No reduction
9)	Invalidity pension on total and permanent disablement	No qualifying period if the person is an 'active, member Pay as pension 50% of average insured salary during the last 12 contributed months. Or The "notional retirement pension" calculated for the contributed months whichever is <u>higher</u> (The notional pension will be the higher after 300 months of contributions) For Inactive members: Pay lump-sum equal to 75% of all contributions made	No qualifying period If period of service is equal to or more than 144 months, pay pension calculated according to normal formula plus lump-sum of 2 months' salary <u>Otherwise</u> Pay lump-sum equal to 2 months' salary for each year of service when the period of service is 3 years or less Two months' salary for the first 3 years and 4 months' salary for each year in excess of 3 years
10)	Maximum invalidity pension rate	75% of the average insured salary on which contributions have been made during the preceding 12 months of contributions	(5/6)th of last months insured salary. If service > 450 months pay a lump-sum equal to two months' salary for each year's service in excess of

		NSIF	PSPF
			(37.5) years' service; in addition to the normal lump-sum of 2 months' salary in (9) above
11)	Survivors benefits	For the survivors of an active member- Pension equal to 50% of average insured salary during last 12 contributed months *Or* The "notional retirement pension" as in (9) above. For survivors of an inactive member:- Pay 75% of all the contributions paid. For survivors of a pensioner, pay the full amount of pension (before commutation if any) that the deceased pensioner was entitled to.	If the period of service is ≥ 144 months pay the pension calculated in the normal way plus lump-sum of 4 months salary. If service is less than 144 months, pay the pension that would have become payable for 144 months plus lump-sum of 4 months' salary. For survivors of a Pensioner, pay the Full amount of pension (before commutation, if any) that the deceased pensioner was entitled to.
12)	Commutation of retirement and invalidity pensions	Up to ($1/3^{rd}$) of Pension could be commuted for a lump sum as per their Table. The balance pension is payable during the specified period in the Table *Or* until death if earlier. Thereafter the full pension is payable.	Up to ($1/3^{rd}$) of Pension could be commuted for a lump sum as per their Table. The balance pension is payable for 15 years. Full pension is payable after 15 years or on earlier death.
13)	Benefits payable on Resignation from the job	If age is 45 or more pay pension or lump sum as in (3) above. Nothing will be paid before the age of 45 years.	Irrespective of the age pay (a) lump sum equal to total contribution paid by the employee if period of service is < 2 years. If service is 2 years or more pay lump-sum equal to 1½ months' salary for each year of the first 7 years service and two months' salary for each years' service in excess of 7 years up to 15 years service. Lump sum equal to 1½ months salary for each of the first 7 years' service and two months' salary for each year in excess of 7 years up to 15 years' service and 3 months' salary for each year in excess of 15 years up to 20 years service. Pension equal to : (0.90) (1/45) (1/12) (Number of months of contributions) (Final month's salary) If service is ≥ 20 years, but is < 25 years

		NSIF	PSPF
14	Benefits payable on Ministerial Termination Or abolition of post	Irrespective of the age a Pension calculated in the normal way is payable if contributions made are ≥ 144 months Otherwise, 75% of all contributions made will be paid	If more than or equal to 144 months' contributions have been made irrespective of age; a pension will be payable. Pension amount is determined in the normal way after adding (1/4th) of future prospective service to the number of months of contributions made. If less than 144 months contributions have been made pay benefits as in the case of resignation from job (see 13) above.) Plus lump-sum of 3 months' salary in all instances (i.e. for contributions < or ≥ 144)
15)	Benefits payable on dismissal from the job	Same as in the case of Resignations (13 above)	Pay 95% of the benefits payable on Resignations (13 above)
16)	Minimum amount of old age, Invalidity and Survivors Pension	4000 SD (as at 31.12.2002)	4800 SD (as at 31.12.2002)
17)	Indexation of pensions	Only the minimum pension is revalued as per Government directives	All pensions in payment (including the Minimum pension) are revalued as per Government directives.
18)	Employment Injury benefits Total disablement Constant attendants' allowance Partial disablement ≥ 15% On death	No qualifying period Iif the person is active, pay 80% of average insured salary as pension Additional 50% of the pension in (a) Pay pension equal to (degree of disability) X [Pension in (a)] / 100 80% of the average insured salary as pension to survivors	No qualifying period Pay (5/6th) of the maximum salary of the next higher 'grade' as a pension plus 6 months' salary. Additional 50% of the pension in (a) Pay pension equal to (degree of disability) X [Pension in (a)] / 100 (5/6th) of maximum salary of the next grade as a pension plus lump-sum of 6 months' salary
19)	Minimum pension on		
	Total disablement, death	4000 SD on 31.12..2002	4,800 SD on 31-12-2002
	Partial disablement	(Degree of disability / 100) (4,000 SD)	(Degree of disability / 100) (4,800 SD)
20)	To whom survivors' pensions are payable	Widow/Widower Daughters – until marriage Sons – up to 26 years Parents – when applicable as per the Table	Widow/Widower Daughters – until marriage Sons – up to 21 years Parents – when applicable as per the Table

Annex C1 Main differences between the NSIF and the PFPF

		NSIF	PSPF
1)	Normal retirement age	60 for males 55 for females	60 for both males and females
2)	Early retirement (with pension)	At age 45 years or more, provided the number of monthly contributions made is ≥ 144.	At any age if 25 years of insurable service is present Or at 50 years if there is 144 months of insurable service
3)	Early retirement with lump-sum	At age 45 years or more where the number of monthly contributions made is < 144	Not possible (see Resignation)
4)	Pensionable salary	Average insured salary on which last 12 months of contributions have been made	Last month's insured salary
5)	Pension accrual rate	(1/50)	(1/45)
6)	Maximum rate of pension	75% of average insured salary of last 12 months	(5/6th) of last month's insured salary
7)	Lump-sums payable on retirement	Nil	2 months' salary When service is > 450 months, pay additional two months' salary for each years service > 37½ years
8)	Minimum pension	4,000 SD on 31.12.2002	4,800 SD on 31.12-2002.
9)	Indexation of pensions	Only the minimum pension is revalued	All the pensions are revalued
10)	Benefits payable at normal retirement age	Pension if contributions made ≥ 144 months. Otherwise 75% of all the contributions made will be paid as a lump-sum	Pension if contributions made ≥ 144 months. Otherwise, lump-sums, the amount of which depends on the period of service.
11)	Benefits payable on Ministerial Termination	Irrespective of age, pay a pension if contributions made ≥ 144 months. Otherwise, 75% of all the contributions made will be paid as a lump-sum	Irrespective of age, if the number of contributions made ≥ 144 months pay a pension calculated on an enhanced period of service (adding 1/4th of prospective service to age 60). If contributions made are less than 144 pay benefits as in the case of Resignations. Also pay 3 months' salary as a lump-sum in all instances
12)	Resignation	75% of all contributions made if age is 45 or more and contributions made is < 44 months. If more than or equal to 144, pay pension. Nothing will be paid until age 45 is reached.	Lump-sums, amount of which depend on period of service if service is < 20 years. If service is 20 years or more pension (reduced for service less than 300 months.)
13)	Dismissal from service	Same as in the case of Resignations	95% of the benefits payable on Resignations
14)	Invalidity benefits	For actives: No minimum qualifying period pay pension equal to 50% of average insured salary of the last 12 months Or the normal pension "for the period of contribution" whichever is more	For actives: Pension according to the normal formula of contribution ≥ 144 months. If contribution < 144 months, pay lump-sum amount, which varies with the period of service

		NSIF	**PSPF**
15)	Survivors benefits	Same as Invalidity	Pay pension plus lump sum of +4 months' salary. If contributions < 144 months, calculate pension assuming 144 months' contributions.
16)	Commutation of pensions	Up to $(1/3)^{rd}$	Upto $(1/3^{rd})$
17)	Commutation factors	Range from 116 to 162	Range from 180 to 300
18)	Period after which full pension is restored	After expiry of stipulated period, or on earlier death	After 15 years, or on earlier death

Annex D Salient features of the common scheme for harmonization of the NSIF and the PSPF

1) Normal retirement agent (NRA) – 60 for both males and females.

2) Early retirement: Allowed at 50 or above provided the number of contributions made is 144 or more. The pension amount determined according to the normal formula (see point 4 below) will be reduced using actuarially determined factors.

3) Pensionable salary: Average of the revalued insurable earnings during the last 5 years <u>or</u> last months' insured salary, whichever is lower.

4) Pension accrual rate = (1/45) for 12 months contributions.

5) Maximum rate of pension = $(5/6)^{th}$ of the final pensionable salary

6) Lump-sum payable on retirement: Nil.

[The end-of-service gratuity payable in the PSPF should be met out of Government Funds.]

7) Minimum pension (monthly): 6,000 SD as at 1.1.2003 (see alternative recommendations..).

8) Indexation of pensions: All pensions to be revalued according to the average rate of increase of the insured wages of the scheme in the preceding year (see alternate recommendation).

9) Benefits payable at NRA to those who do not have 144 months contributions.

(Number of months contributed) (average of revalued monthly contributions of last 5 years)

In the PSPF, if the current formula gives rise to a higher amount, the Government should pay the difference.

10) Benefits payable on Ministerial Termination:

Nil [Unless a pension is payable at 50 or above as in early retirement].

In the PSPF, the Government will have to bear the cost of anything payable over and above what is available under (2) above. – i.e. early retirement

11) Benefits payable on resignation from employment: Nil, if before reaching age 50. After reaching age 50, benefits as per early retirement will be paid.

12) Dismissal from Service: Same as in Resignation.

(Cont'd.)

13) Invalidity benefits:

Qualifying conditions: Should satisfy at least one of the following contribution conditions.

a) Has paid or been credited with contributions for a minimum of 60 months of which contributions must have been paid for at least 12 months within the period of 36 months preceding the commencement of invalidity.

b) Has paid or been credited with contributions for a minimum of 144 months.

c) Special invalidity credits (SIC): Awarded only to those who satisfy the qualifying conditions mentioned above.

SIC of 6 monthly contributions shall be awarded for every year between the age of 60 years and the age last birthday when the invalidity occurred.

Rate of benefit:

If at least 144 monthly contributions have been paid or credited (including the SIC), the rate of invalidity pension payable is determined as in the case of the old age pension. If less than 144 monthly contributions have been paid or credited, then the rate of monthly invalidity pension payable shall be 30% of final pensionable monthly salary.

Invalidity grant:

Payable to an invalid member who has paid at least 12 monthly contributions but who is not entitled to an invalidity pension.

Benefit rate

1.50 times the final pensionable monthly salary for each 12 contributions paid or credited.

14) Survivors' benefits: Same as in the case of Invalidity. Distribution as at present between wife/wives, children etc .as shown in Table 39

15) Commutation: 1/3rd of the Old age or Invalidity Pension

16) Commutation factor: Give appropriate actuarially determined factors for commutation

17) Restoration of commuted pension: Not allowed

18) Employment injury: For total disablement pay, 80% of pensionable salary (defined earlier)

19) Minimum pensions for invalidity, survivors, employment Injury (total disablement) - same as for old age

20) Revaluation of invalidity, survivors' and EI pensions: Should be done as in old-age pension's revaluation

21) Survivors' pensions to orphans: Will be paid up to (males) 26 years if they are engaged in fulltime studies; pensions cease on marriage or when employed.

22) In the case of PSPF members, additional benefits may be paid by Government (as the Employer) but the cost of such benefits should be borne by the Government and not by the Fund

Annex E Financial systems applied in social insurance schemes

1. Pure assessment (Pay-as-you-go) system

Under this financial system, the contribution rate during a given period, say one year (annual assessment) or few years, is determined in such a manner that the income from contributions during the period will just cover the expenditure of the scheme during the same period, with a small margin to permit the constitution of a contingency reserve. This is the system, which is usually applied to finance short-term benefits such as sickness and maternity cash benefits, etc. The level of annual benefit expenditure in respect of these types of benefits may be expected to remain at a relatively constant level, once the scheme has attained a certain maturity, in the sense that insured persons have become sufficiently familiar with the scheme, unless the benefit provisions themselves have been changed. The function of the contingency reserve in this context is to enable covering of unexpected expenditure due to temporary fluctuations of the risk factors involved. The reserve should, therefore, be maintained in a sufficiently liquid form so that it can be readily resorted to when necessary.

If the financial system of pure assessment were to be applied in the case of a new pension scheme, it would involve frequent revisions of the contribution rate since the annual expenditure under such a pension scheme would begin at a comparatively low level and increase continuously from year to year over a long period, not only because there will be more and more surviving pensioners, but also because each new group of pensioners will be drawing higher rates of pension due to longer insurance periods compared to the previous generations of pensioners. In the case of such a pension scheme, therefore, it is clear that the system of pure assessment is not an appropriate financial system. For a mature scheme, however this financial system could be adopted.

2. General average premium system

This system provides for a theoretically constant rate of contribution ensuring financial equilibrium ad infinitum, which means that at any time the present values of all probable future contribution income plus accumulated reserves should be equal to the present value of all probable future outlays, both in respect of the initial population and future entrants. The contribution rate so determined would be relatively high and would lead to formation of high reserves.

In practice, when the general average premium is applied, the contribution rate does not remain always constant but it is likely to be revised on the basis of experience at periodic actuarial reviews. On the other hand, if this system were applied to a new pension scheme, from the start, the rate of contribution would be relatively high and this may cause an undue burden on the economy and on the contributing parties.

3. Scaled premium system

It is possible to devise many intermediate systems of finance between the basically unfunded (pay-as-you-go) pure assessment system and the fully funded general average system.

The following factors frequently lead to the adoption of an intermediate system of finance:

(a) contribution rate must not be excessive with reference to the capacities of the members and the economy in general to support it,

(b) initial and any subsequent contribution rates established under the system of finance applied to the scheme should remain relatively stable for reasonable periods of time. Increases in the contribution rate should be gradual, particularly when they are not accompanied by an improvement in benefits.

An example of an intermediate level of funding is the scaled premium system of finance. Under this system, a contribution rate is established so that during a specified period, which is known as the period of equilibrium, the contribution income and the interest income on the reserves of the scheme will in each year be at least adequate to meet the expenditure on benefits and administration in that year. In order to avoid decrease in the reserves after the end of a period of equilibrium, the contribution rate must be revised prior to this and a new higher contribution rate applied during a new period of equilibrium. Thus, the financial equilibrium would be assured for limited periods, such as 20 years, 15 years or 10 years, within each of which the contribution rate is supposed to remain stable although it would have to be subsequently increased by stages, that is, each 20, 15 or 10 years, respectively. There would be moderate accumulation of funds – depending on the length of the period of equilibrium. Thus, a short period of equilibrium would result in a low contribution rate, to be increased rather frequently and also in a low degree of accumulation of funds, thus approaching the system of annual assessment. On the other hand, a long period of equilibrium would result in a relatively high initial contribution rate and a high degree of accumulation of funds and consequently approach the general average premium system.

The scaled premium system is flexible, as it permits adaptation to changes in the conditions determining the financing of the scheme. It should be emphasized, however, that the system requires periodical increases of the contribution rate, which are not accompanied by benefit improvements. Although the contribution rate during the initial period of equilibrium will be lower than that under the general average premium system, eventually a stage will be reached when it will exceed the contribution rate required under the latter system of finance.

4. System of assessment of constituent capitals

This financial system is normally adopted for financing of Employment Injury Benefits.

Under this system the contribution rate is so determined that the income from contributions during any given year is equal to the capital value of pensions arising in that year. The adoption of this system enables, in the case of new schemes, to maintain the stability of the contribution rate, which would not be possible if the system of pure assessment were to be adopted. It should also be appreciated that the nature of the risk giving rise to these benefits (disablement and death benefits as a result of employment-related injuries/accidents) is different from that giving rise to pensions under old-age and invalidity insurance in the sense that the occurrence of the risk is instantaneous, and it is therefore appropriate to set aside immediately the funds necessary to cover the corresponding benefit expenditure. Another argument for adopting this system, which applies where the employment fluctuates appreciably from year to year, is that the charges resulting from such temporary activities should be covered during the period of activity itself. Under this system, a technical reserve will accumulate, equal at any moment to the capital value of all then pensions-in-payment.

Annex F Valuation methodology

The actuarial valuation of the cost of a pension scheme involves the estimation of the future benefit expenditure and the contribution base over a long period of time. A scheme, which provides pension benefits like the NSIF and the PSPF, is characterized by a steady increase in the benefit expenditure both in relative terms (as a percentage of insurable earnings) and in absolute terms due to the following reasons.

Each year a new group of pensioners (insured persons and dependants) will qualify to receive pensions.

- The level of benefits will increase with the period of contribution and the longer the scheme operates, the greater the average number of years of contributions on which pensions are awarded.
- As the pensions are linked to earnings, the level of pensions increases in step with the insured person's earnings.
- Improvement in life expectancy will lead to pensioners receiving benefits for a longer period of time.
- Periodical revaluation of pensions in payment in order to maintain their purchasing power (real value), lead to higher pensions.

The assessment of the future benefits and contributions under a pension scheme is done by means of actuarial projections, where based on certain economic and demographic assumptions, the operation of the scheme is simulated on a year-by-year basis making use of the computer based ILO PENSION MODEL.

To properly use the ILO projection tools, it is necessary to develop demographic and economic assumptions taking in to account the general population, the economic growth, the labour productivity, inflation, the primary allocation of profits and wages and salaries.

Because of the long term nature of the benefits, the assumptions are set such that they reflect possible long-term trends rather than the recent experience.

The purpose of the pension model is to examine the financial impact of different options in the design of benefits and financing provisions for long-term benefits. The Pension Model is used to develop long-term projections for the purpose of:

- projecting expenditure and insurable earnings under status quo conditions or a base line scenario and for other scenarios
- assessing the options to build up a technical reserve
- recommending contribution rates consistent with a funding objective
- testing how the system reacts to different economic and demographic conditions.

The method involves the estimation of the future annual expenditure to be met and the future insurable earnings of (a) the persons who are assumed will be insured as at the valuation date and (b) the persons who are assumed will join the scheme in the future. For this purpose, a year-by-year cohort methodology is adopted where the initial insured population is aged and is gradually replaced by successive cohorts of participants on an annual basis according to the demographic and coverage assumptions. Projection of insurable earnings and benefit expenditure are then performed according to the economic assumptions and the scheme provisions. The estimated benefits expenditure and the contribution base (insurable earnings) of the future years and the assumed interest rates are then utilized to estimate the contribution rate required to finance the benefits, according to the adopted financial system.

The validity of the estimates made is linked to the realization of the assumptions underlying the projections. Changes in the demographic structure of the insured population as well as variations in the salary distributions can give rise to results, which differ from those projected. Hence periodical actuarial reviews are necessary to assess the consistency of the assumptions made and to adjust them if needed.

The main objective of the pension projections is not to forecast the exact amounts of pension expenditure and contribution income but to check the financial viability of the scheme i.e. the relative balance between the future income and expenditure.

Annex G Factors for calculation of the commuted value of pensions

(Underlying rate of interest = 4% per annum.)

Age attained	Factor with which the amount of the commuted portion of the monthly pension should the multiplied	
	Males	Females
45	154	157
46	151	155
47	149	152
48	146	150
49	144	147
50	141	145
51	138	142
52	135	139
53	132	136
54	129	132
55	126	129
56	122	125
57	118	121
58	114	117
59	111	113
60	106	109

Annex H Factors for ascertaining the capital value of periodical payments

(a) Of disablement benefits and
(b) To the dependants as death benefit

Age attained during the year by the beneficiary	Factor with which the monthly rate of benefits should be multiplied:	
	Males	Females
0 to 15	370	380
16	364	373
17	360	370
18	356	365
19	352	361
20	348	357
21	344	353
22	340	349
23	336	345
24	332	341
25	328	337
26	324	333
27	320	328
28	316	324
29	311	320
30	307	315
31	303	311
32	298	306
33	294	301
34	289	296
35	284	291
36	279	286
37	274	281
38	269	276
39	264	271
40	258	266
41	253	260
42	248	255
43	242	249
44	236	244
45	231	238
46	225	232
47	219	226
48	213	220

Age attained during the year by the beneficiary	Factor with which the monthly rate of benefits should be multiplied:	
	Males	Females
49	207	213
50	201	207
51	195	201
52	188	194
53	182	188
54	175	181
55	169	174
56	162	167
57	155	160
58	149	153
59	142	145
60	135	138
61	128	130
62	120	123
63	113	115
64	105	107
65	98	99
66	90	91
67	82	83
68	74	75
69	66	66
70	57	57