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LAO PEOPLE'S DEMOCRATIC REPUBLIC

Development of Social Security

Report to the Government on the Actuarial Valuation

International Labour Office Geneva
United Nations Development Programme

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Background

Since the adoption of the New Economic Mechanism (NEM) in 1986, Lao People's Democratic Republic (Lao PDR) has been undertaking a major reform with a view to transforming its economic system from a centrally-planned system to an open market system.

At present, only workers in the public sector are covered by the existing social security scheme. There is no social security provision for employees in the private sector, which has been growing rapidly. In 1994, the Government passed the Labour Law, which provides a basic outline of the social security for workers in the private sector. In order to formulate the policy options for the implementation of the scheme, a Social Security Reform Steering Committee was established in 1996. The Committee has approved a draft Social Security Decree, which envisages a phased implementation of a fully-fledged social security system. The scheme is planned to start within one year of the approval of the Decree by the Prime Minister. The draft Decree stipulates the introduction of short-term benefits (health care, sickness, maternity, birth grant, death grant, and employment injury) and pension benefits (old-age, survivors' and invalidity).

The Government also intends to reform the existing social security scheme in the context of the current policy for restructuring the public sector. The reform focuses on measures to restore the long-term financial equilibrium, in particular, by reinforcing the financial basis and by reviewing the current high benefit level. The Social Security Steering Committee has agreed that both private and public sector schemes be integrated into a unified scheme in the future.

The purpose of the present report is, first, to study the financing issues of the proposed scheme for the private sector, and second, to analyse the financial status of the existing scheme for the public sector workers and examine the financial implications of some reform options. Actuarial projections have been made under two sets of economic assumptions, namely the base case assumption and the high growth assumption.

Actuarial analysis of the private sector scheme

Actuarial valuation of the short-term benefits

- Under both the base case and the high growth assumptions, the PAYG cost rate is expected to increase gradually from about 6.2% in 2000 to 6.4% in 2005. This increase is mainly due to the gradual accumulation of periodical payments of the employment injury benefit.

- The following contribution rates are recommended for the short-term benefits:

Recommended initial contribution rates of the short-term benefits

	Worker	Employer	Total
Health care fund	1.65%	1.65%	3.30%
Cash benefit fund[1]	1.20%	1.20%	2.40%
Employment injury fund[2]	-	0.70%	0.70%
Total	**2.85%**	**3.55%**	**6.40%**

Actuarial valuation of the long-term pension benefits

- Under the base case assumption, the PAYG cost rate of pension benefits (including administrative expenses) is expected to increase continuously by about 0.3%-points every year, and reach 7.0% by 2020 and 17.4% by 2050.

- To determine the future contribution rates, the following three schedules have been investigated:

Schedule	Initial contribution rate (1999)	Increase in the contribution rate	Final contribution rate (2049)
A	2.0%	by 1.5%-points (every 5 years)	15.5%
B	3.0%	by 3.0%-points (every 10 years)	15.0%
C	10.0%	none	10.0%

(i) Under Schedule A, the balance of the fund is expected to be in surplus throughout the projection period, and the expected amount of reserves would be less than 1% of the GDP, or about 1-2 years' expenditure.

(ii) Under Schedule B, as compared with Schedule A, the higher contribution rates in the early years will result in a higher level of reserves.

(iii) Under Schedule C, a rapid accumulation of the reserves is expected in the early years. After attaining its peak at about 3.5% of GDP by 2025, the relative level of the reserve is estimated to decline. By 2035 the expenditure is not covered solely by contribution income; by 2045 the fund is estimated to be in deficit; and, by 2049 the reserve is expected to be depleted.

[1]Sickness and maternity benefit, birth and death grant.

[2]To be gradually raised to phase in with the future increase in expenditure.

- In view of the not fully developed capital market in Lao PDR, and the gradual cost increase due to moderate ageing of the population, it is suggested that the contribution rate should be increased gradually with a relatively low level of funding.

- The projection results suggest that an initial contribution rate should be at least 2.0% and this rate should be increased by 1.5%-points every five years. Alternatively, with an initial contribution rate of 3.0% which would ensure the financial equilibrium for the next ten years, this rate would then have to be increased by 3.0%-points every ten years. Taking into consideration the long-term increase in the pension expenditure, the optimal schedule of contribution rates should be set out. In order to ensure the long-term financial viability of the scheme under economic changes, the actuarial valuation should be conducted at least every five years.

Actuarial analysis of the public sector scheme

Problems in the financing of the current scheme

- The current contribution rate of 6% (paid by the workers), which was determined without proper actuarial evaluation, does not adequately meet the expenditure of the scheme. In fact, the scheme has been in a growing deficit, which has been covered by the government budget.

- Contributions are collected only from the basic salaries. However, there are various forms of additional allowances from which contributions and taxes are not collected.

- The benefits covered by the Social Security Fund and the Government are not clearly separated. Although the Fund was initially intended to finance only pension benefits, the Fund has been covering various other benefits.

- The scheme provides various generous provisions, like high replacement rates, early retirement opportunity at 55 for women and war veterans. In addition there are no provisions to restrict the entitlement of two or more benefits (i.e. old age pension and invalidity pension).

Actuarial valuation of the long-term pension benefits

- In 1997, the PAYG cost rate for the pension benefits stood at 12.8%. The *status quo* projections under the base case assumption indicate that this rate could stay below 14.5% till 2020. After this, due to the ageing of the population, the PAYG cost rate is estimated to increase to about 25% by 2050. Under the high growth assumption, with a higher growth of the number of civil servants, the PAYG rate of the pensions would increase to 13.2% in 2020 and to 16.3% in 2050.

- The financial implication of main proposals to restore the financial equilibrium has been examined:

(i) The reform projections under the base case assumption indicate that the PAYG cost rate is estimated to be 12.7% in 2020, and 20.6% in 2050. Under the high growth assumption, the PAYG rate would be lower, at 11.0% in 2020 and at 13.5% in 2050.

(ii) The extension of the retirement age for female workers to 60 leads to the savings of the PAYG cost rate of old-age pensions by 1.5% in 2020 and by 3.7 % in 2050, although the cost of the invalidity pensions is expected to increase slightly.

(iii) The reduction of the entitlement of two or more pensions for new pensioners will result in a reduction of PAYG cost rate by 0.2% in 2020 and 0.6% in 2050.

(iv) The introduction of widow(er)s' pensions would increase the PAYG cost rate by 2%-3% in the long-term.

Evaluation of the accrued liabilities of the workers in formerly state-owned enterprises

In addition to the valuation of the existing scheme, the accrued liabilities of the workers in formerly state-owned workers have been estimated. The present value of the accrued liabilities is estimated to be 28 billion Kip, which is 4.7 times the annual expenditure of the Social Security Fund. The average amount per worker is about 1 million Kip, which is almost equivalent to 2 times the average annual basic salary.

Introduction

Within the framework of the UNDP-funded project, "Development of Social Security (UNDP 120/96/001)", the International Labour Organization (ILO) has been requested to carry out an actuarial analysis of the social security system in Lao PDR. Prior to this, in 1995, ILO carried out an assessment study which formulated proposals for a reform of the social security system in Lao PDR, with particular emphasis on the financial implications of both the existing and proposed systems. As a consequence, the need for technical assistance in establishing an organizational structure for administering the both systems was identified.

The purpose of the present actuarial analysis is to provide a financial basis for various recommendations for the reform of the existing scheme for public sector employees as well as for the design and implementation of a new scheme for private sector employees. According to the Terms of Reference of this project, the Actuary was required to carry out the following tasks[3] :

- Ensure the availability of demographic and economic data required for the actuarial projections. Prepare instructions for the national counterparts and the Project Coordinator concerning data that still have to be obtained following the first assignment.

- Conduct actuarial projections for the main reform options concerning the public sector social security scheme.

- Conduct actuarial projections for the main policy options concerning the social security scheme for private sector employees.

- Determine the cost implications of the reform options concerning employees of state-owned enterprises, for the public sector and the private sector scheme.

[3] Throughout his activities for this project, the Actuary was technically supported and supervised by the actuaries in the Financial, Actuarial and Statistical Branch of the Social Security Department of the ILO:

Mr. Michael Cichon, Chief of the Branch, for general supervision;
Mr. Kenichi Hirose, for technical supervision and backstopping.

The supplement was drafted by Mr. Wolfgang Scholz, Senior Economist of the same Branch. The Actuary carried out his tasks in close collaboration with the team of other international experts, led by Mr. Roger Beattie (ILO/EASMAT), and assisted by Mr. Michiel van der Auwera, Project Coordinator. Ms. Hema Menon, Ms. Minori Goto and Ms. Patricia Frenette provided technical and editorial assistance in the drafting of this report.

- Prepare explanatory notes and make presentations, as required, on important financial issues to be considered by the Steering Committee.

- Prepare a brief report at the end of the first assignment, and a detailed report including the projection results at the end of the second assignment.

In order to undertake these assignments, the Director-General of the International Labour Office appointed Mr. Jan Stoekenbroek, an Actuary based in the Netherlands. As stipulated in the Terms of Reference, the assignments were carried out in three phases. The first phase (11 August-22 September 1997) was carried out in Vientiane. During this period, data collection was organised and preliminary discussions were held with the relevant authorities in the Lao Government on the reform options. During the second phase (October-November 1997) in Amstelveen and Geneva, detailed actuarial computations were undertaken by applying the ILO pensions model developed by the International Actuarial Services, and the draft actuarial report was prepared. In the second mission to Vientiane (10-14 November 1997), the preliminary results were presented to the authorities in the Government. During the third phase in Vientiane (11 January-3 February 1998), the interim results of actuarial valuation were presented to the Steering Committee. Further, main findings and recommendations of the final draft of the present report was presented at the Steering Committee on 9 November 1998, in conjunction with the activities in accounting and financial management (12 October-11 November 1998). This provided an opportunity to discuss with the Lao authorities to assess the feasibility of the proposed policy recommendations. These discussions have been reflected, where possible, in this final report of the actuarial valuation.

This report presents the main findings and recommendations drawn from the results of the actuarial valuation of the newly introduced private sector scheme and the proposed reforms of the civil service scheme. The structure of the report is as follows:

- Chapter 1 of the report provides a brief macro-economic and demographic overview of Lao PDR.

- Chapter 2 sets out the main features of the actuarial valuation and the economic and demographic assumptions, and discusses on financing systems which can be implemented for a social security scheme.

- Chapter 3 is devoted to the actuarial valuation of the proposed private sector scheme, analysing the results for both the short-term benefits and long-term pension benefits.

- Chapter 4 presents the actuarial valuation of the existing civil service scheme and discusses the financial consequences of the proposed reform options.

- Four annexes supplement the report with an overview of the current legislation of the civil service scheme, the proposed legislation of the private sector scheme, and further statistical information.

It should be noted that the results of the actuarial valuation presented in this report are based on the data collected in 1997, when growth perspectives for Lao PDR were still favourable. With the recent economic downturn in South-East Asia, it has made it imperative to review these perspectives. To take into consideration the resulting macro-economic changes in Lao PDR, a supplement to the report has been added. The analyses made in the supplement are based on data up to the end of the third quarter 1998.

The Director-General of the ILO wishes to express his appreciation to Mr. Noy Indavong, Vice Minister of Labour and Social Welfare, Mr. Somnuk Vorasarn, National Project Director, and Mr. Bounthavy Sisouphantong, Director of the National Statistical Centre and his staff for their assistance made available to the Actuary during the mission.

Chapter 1: The economic and demographic context

1.1 An economic overview

1.1.1 New Economic Mechanism

After the proclamation of the Lao People's Democratic Republic in 1975, the Government introduced a centrally planned economy with the allocation of resources through annual national and provincial plans. It was intended to collectivize the agricultural sector and develop the industrial sector under the state management. After the decade-long efforts, several problems were identified, such as difficulties in coordinating the annual production plan, lack of incentive for state-owned enterprises to achieve the production targets, and inappropriate pricing of scarce products.

Under such circumstances, the Government introduced a programme of economic reforms in 1986, known as the "New Economic Mechanism (NEM)". With the adoption of the NEM, the Government has undergone various reforms with a view to transition from a centrally planned economy to an open market economy.

During the subsequent years, prices were liberalized, state enterprise subsidies were ceased and management was made autonomous, the public sector and the fiscal system were fundamentally reformed, and the exchange rate was adjusted to reflect the market rate.

1.1.2 Economic growth

Since the inception of the NEM in 1986, the economy of Lao PDR has shown remarkable progress. Table 1-1 shows the main economic indicators of Lao PDR for the period 1986-1997. Although the country suffered a stagnation in 1986 and 1987 (caused by a drop in rice harvests due to droughts), the economy has grown continuously since 1988. The average annual rate of real growth during 1986-1996 was 5.3% (and 6.7% for 1991-1996), with a maximum of 12.8% in 1989 and a minimum of 3.4% in 1991.

Table 1-2 indicates the economic growth by major sectors. Due to significant expansion of the industrial and service sectors, there has been a gradual change of the economic structure. Between 1986 and 1996, the GDP share of both sectors grew from 29.0% to 43.5%; as a result, the share of agriculture decreased from 63.6% to 53.4%. During the same period, the share of public sector decreased from 7.4% to 3.2% due to a comprehensive reform, including the privatization of state-owned enterprises (SOEs) and the voluntary retrenchment programme of civil servants.

1.2 Demographic and social development

1.2.1 Demographic trends

Table 1-3 summarises the main demographic indicators since 1950. According to the second national census of Lao PDR carried out in 1995, the population was estimated at about 4.6 million in 1995 and it is growing at an average annual rate of 2.5 per cent. The total fertility rate (TFR) stood at 5.6 per woman in 1995. Life expectancy at birth was estimated to be 49.5 years for men and 52.5 years for women in the period 1990-1995. The infant mortality rate remains high at 104 deaths per 1,000 live births (within one year) in 1990-1995. The majority of population live in rural areas; the 1995 Census estimates 17% of the total population lived in urban areas[5] and 83%, in rural areas. Owing to high fertility rates and high mortality rates, the age structure of the population shows a large proportion of the young; in 1995, about 45% of the population were under 15 years of age.

Table 1-3: Main demographic indicators of Lao PDR, 1950-1995

Year	*1950*	*1960*	*1970*	*1980*	*1985*	*1990*	*1995*
Population (thousands)	1755	2177	2713	3205	3594	4202	4575
Age structure (%)							
0-14	41.9	42.1	42.3	42.0	42.7	43.6	44.2
15-59	53.5	53.8	53.3	53.3	52.5	51.5	50.1
60-	4.6	4.1	4.4	4.7	4.8	4.9	5.7
Period	*1950-55*	*1960-65*	*1970-75*	*1980-85*	*1985-90*		*1990-95*
Population growth rate (% change p.a.)	2.05	2.22	2.18	2.29	3.12		2.50
Life expectancy at birth (year)							
Males	36.5	39.1	39.1	44.5	47.0		49.5
Females	39.2	41.8	41.8	47.5	50.0		52.5
Infant mortality rate (per 1000 births)	180	150	145	122	110		104
Total fertility rate (children per woman)	6.15	6.15	6.15	6.69	6.69		5.60

Source: 1950-1990: UN, "World Population Prospects, the 1996 revision". 1995: Census data.

[5] According to criteria of the 1995 Census, a village is classified as "urban" if it satisfies at least three of the following five conditions:

- there is a market in the village;
- there is a road for motor vehicles to access the village;
- the village lies in the municipal vicinity where the district or provincial authority is located;
- the majority of households are electrified;
- there is a tap water supply in service to the majority of households.

1.2.2 Human development

According to a World Bank study in 1995, about 46% of the population live below the poverty line, and 22% live below the food poverty line (2,100 calories per person per day). The incidence rate of poverty is higher in rural areas (53%) than in urban areas (24%). Regionally, the South region is the poorest, with almost 60% of the population below the poverty line, followed by the North region (46%) and the Central region (40%).

Adult literacy rate in Lao PDR is 57% in 1995. The enrolment rate in primary schools was 60%, with a completion rate of 30%. In addition, access to higher education is limited. These figures reflect deficiencies in education facilities such as lack of schools, qualified teachers and textbooks.

The main health indicators, such as infant and maternal mortality rates, life expectancy, and fertility rates show that medical care and facilities are below the minimum standards. Public hospitals are poorly maintained and difficult to access. Moreover, there is a shortage of qualified medical staff.

Overall, Lao PDR is ranked 136th in the UNDP Human Development Index of 175 countries in 1997 (while it is ranked 113th in the real GDP per capita), and classified amongst the low human development countries.

1.3 Labour force and employment

1.3.1 Labour force

The labour force (also called the economically active population or the labour supply) is defined as comprising of all persons of either sex who supply labour for the production of economic goods and services during a specified period. This population comprises of persons who are working (i.e. the employed) as well as those who do not have employment and are looking for work (i.e. the unemployed).

According to the 1995 Census, the labour force was estimated as 2.2 million, representing 70.4 per cent of the total population aged 10 years and older. Table 1-4 shows the population and labour force participation rates (the ratio of the labour force to the total population) by age group and by urban and rural areas. In all age groups, the labour force participation rate is higher in the rural areas than in urban areas. This is due to the high incidence of subsistence farming in rural villages, where women's labour participation rates are higher, particularly in the age groups 10-19 and 60 and over.

Table 1-4: Population and labour force participation rates by age in urban and rural areas, 1995

	Males		Females		Total	
	Population	Labour force participation	Population	Labour force participation	Population	Labour force participation
Urban areas						
10-19	96,883	*15.0%*	95,215	*25.9%*	192,098	*20.4%*
20-29	69,858	*80.0%*	75,767	*76.7%*	145,625	*78.3%*
30-39	51,473	*96.1%*	50,510	*76.0%*	101,983	*86.2%*
40-49	30,330	*96.0%*	27,226	*72.2%*	57,556	*84.7%*
50-59	18,761	*84.9%*	18,609	*52.6%*	37,370	*68.8%*
60+	19,921	*41.9%*	22,205	*16.7%*	42,126	*28.6%*
Age total	**287,226**	***60.3%***	**289,532**	***53.3%***	**576,758**	***56.8%***
Rural areas						
10-19	437,425	*34.7%*	431,330	*53.7%*	868,755	*44.1%*
20-29	261,350	*95.1%*	299,043	*96.4%*	560,393	*95.8%*
30-39	219,776	*98.9%*	225,884	*96.8%*	445,660	*97.8%*
40-49	136,817	*98.5%*	144,440	*95.5%*	281,257	*96.9%*
50-59	94,838	*91.7%*	110,576	*75.8%*	205,414	*83.1%*
60+	105,212	*56.5%*	113,968	*31.2%*	219,180	*43.3%*
Age total	**1,255,418**	***71.6%***	**1,325,241**	***75.1%***	**2,580,65**	***73.4%***
Total (urban +rural)						
10-19	534,308	*31.1%*	526,545	*48.6%*	1,060,85	*39.8%*
20-29	331,208	*91.9%*	374,810	*92.4%*	706,018	*92.2%*
30-39	271,249	*98.4%*	276,394	*93.0%*	547,643	*95.7%*
40-49	167,147	*98.0%*	171,666	*91.8%*	338,813	*94.9%*
50-59	113,599	*90.5%*	129,185	*72.4%*	242,784	*80.9%*
60+	125,133	*54.2%*	136,173	*28.8%*	261,306	*41.0%*
Age total	**1,542,644**	***69.5%***	**1,614,773**	***71.2%***	**3,157,41**	***70.4%***

Source: Census 1995

1.3.2 Employed population

Table 1-5 summarises the estimated labour market balance. The following observations can be made:

- The 1995 Census estimates the employed population as approximately 2,166,000, which represents 97.5 per cent of the labour force population (i.e. the unemployment rate is 2.5 per cent).

- The employed persons are predominantly engaged in agriculture; the number of workers in the non-agriculture sector is estimated as 313,000, of which 183,000 workers are employed in the private sector, 70,000 workers in the public sector, and 60,000 in the army and the police. The number of public sector workers is consistent with the general statistics of the civil service and the data obtained from the Department of Public Administration and Civil Service. Further, of the total private sector workers, it is estimated that 50,000 workers are engaged in industry, and 133,000 in service.

Table 1-5: Population, labour force and employment, 1995

	Males	Females	Total
A. Total population	2,261,000	2,314,000	4,575,000
B. Population 10 yrs. and over	1,543,000	1,615,000	3,158,000
C. Labour force population (10 yrs. and over)	1,072,000	1,150,000	2,222,000
D. Employed population, of which:	1,045,000	1,121,000	2,166,000
D.1 agriculture	849,000	1,004,000	1,853,000
D.2 non-agriculture	196,000	117,000	313,000
of which:			
D.2a public sector	45,000	25,000	70,000
D.2b military and police	56,000	4,000	60,000
D.2c private sector	95,000	88,000	183,000
of which:			
D.2b-i enterprises with more than 5 workers	52,000	24,000	76,000
D.2b-ii enterprises with more than 10 workers	49,000	23,000	72,000
E. Unemployed population (C)-(D)	28,000	28,000	56,000
F. Labour force participation rate (C):(B)	69.5%	71.2%	70.4%
G. Unemployment rate (E):(C)	2.6%	2.4%	2.5%

- The results of the labour force survey in 1994 suggest that out of the private sector workers in non-agriculture (183,000), 76,000 work in the formal sector (42%), and 107,000 in the informal[6] sector (58%). The same survey also provides the following breakdown of the informal sector workers: 78% are own-account workers; 18% are unpaid family workers; and 4% are wage workers. This suggests that the great majority of workers in the informal sector are outside the compulsory coverage of the social security scheme.

[6]The "informal" sector is defined as private business operated by household which has not more than five paid employees.

- The target population covered by the newly implemented social security scheme is composed of the employees of private enterprises with more than 10 workers. According to the statistics of the Ministry of Industry and Handicraft and the labour force survey, there are 32,000 employees in the industry, 40,000 in the service, which made up the total of 72,000 employees. This represents 94% of the total workers in the formal, non-agricultural private sector.

Chapter 2: Assumptions and methods of the actuarial valuation

2.1 The approach to the actuarial valuation

2.1.1 Need for actuarial valuation

In order to ensure the long-term viability of a social security scheme, the financial position of the scheme has to be reviewed on a regular basis. This is achieved by means of actuarial valuations.

The primary purpose of the actuarial valuation is to provide a quantitative basis for policy makers to enable sound financial management of the scheme in the long-term. This is done through estimating the future developments of the financial situation of the scheme under certain demographic and economic assumptions. Projections are made on a year-by-year basis, to estimate the expected income (contributions and investment returns) and expenditure (benefits and administration costs) in the future, and to illustrate the development of the reserves of the scheme. For the present valuation, actuarial projections have been made by using the model developed by the ILO. Figure 2-1 represents the work flow of the model.

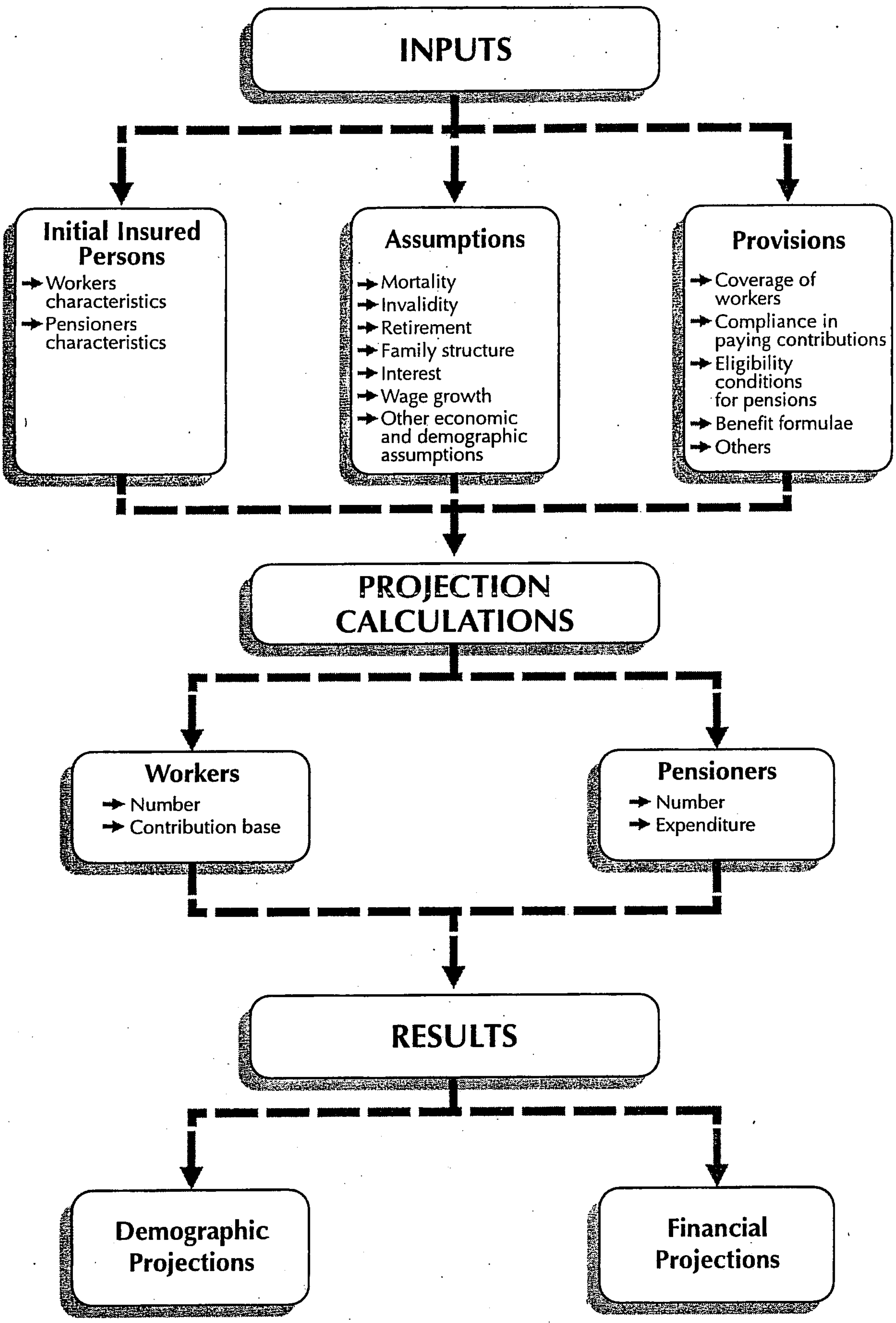
The actuarial valuation may also serve as an early-warning device for necessary cost containment measures through detecting future financial shortfalls. In a reform process of the scheme, it can also provide policy makers with information on the financial implications of the proposed changes.

It should be noted, however, that the main objective of the actuarial valuation is not to predict precisely the amount of future income and expenditure. Firstly, it is almost impossible to predict the determinant factors of income and expenditure - such as economic growth, inflation, unemployment, technological development, and health care seeking behaviours. Hence, the experience may deviate from the assumed figures and give rise to results different from projections. Secondly, approximations made in the estimation method can produce a certain margin of error. The results of the actuarial valuation should, therefore, be considered as reasonable estimates derived from assumptions based on the observation of past experiences and the best information on expected future development. In order to cope with this uncertainty, projections have been made under two assumptions in this valuation.

2.1.2 Sources of the base year data

In the actuarial valuation, demographic and financial data are projected into future by applying actuarial development factors to the data of the base year. In the present valuation, the year 1995 has been selected as the base year of projection. The data reflecting the characteristics of the schemes in the starting year of projection have been collected from the following sources:

Figure 2-1: ILO Pension Model (ILOPENS)



Private sector workers

No empirical data were available for the newly implemented scheme for private sector employees. The data assembled are as follows:

- The 1995 Census provides data with respect to age distribution, marital status and the number of children, but data by sector were not available.

- Data on salaries by sex and age have been obtained from the Urban Labour Force Survey 1994. These figures were adjusted to the present wage level after taking into account the additional information which was obtained from discussions with officials of the NSC and relevant Ministries;

- A special survey was conducted in order to obtain information on the frequency of sickness, employment injury and maternity. Questionnaires were sent to 45 companies, of which 23 (with about 2,400 employees) responded. These results were used for a statistical analysis with regard to the frequency of these contingencies. A detailed description and the main results of the survey can be found in Annex C.

Civil servants

General data on the existing civil service scheme have been supplied by organizations in charge of the administration of both active and retired workers. However, owing to the highly decentralised administration of the scheme, it was difficult to obtain complete information required for the actuarial valuation. In such a case, required data have been estimated by the available data. The data situation thus is not fully satisfactory. Normally, one could expect that reliable statistics on the structure of the insured and beneficiaries are available. These data which are crucial for estimating the future income and expenditure should not be used on the estimated basis.

In this valuation, the following data have been used:

- Data on the active workers by sex and age group have been collected from the "General Statistics on the Civil Service in Lao PDR", published in February 1996;

- Information on the army and police was not available. Therefore, both income and benefit expenditure concerning the army and police are not taken into account. The benefits for workers in this category are paid separately from the State budget;

- The total amount of benefits and the number of beneficiaries were available. Information by sex and age groups has been drawn from the database registering the pensioners who are paid by the Ministries, the Central Organizations and the Vientiane Municipality. These data represent 20% of the old-age pensioners and 10% of the invalidity pensioners.

2.2 Macroeconomic assumptions

For the purpose of actuarial projections, two alternative assumptions on economic growth have been devised. Macroeconomic consistencies are assumed to underlie both sets of assumptions. Table 2-1 summarizes the key indicators projected under both assumptions.

Base case assumption

The base case assumption is set out on the condition that, although the Lao economy cannot avoid the influences of the current economic problems of the region, adequate macroeconomic policies would enable the Lao economy to return rapidly to a sustainable growth trajectory.

This assumption is characterised by two features. First, the economic growth is expected to be stagnant for 1998 and 1999 but quickly reach a level of 6% for the period 2001-2010; then, the growth rate would converge gradually to an ultimate level of 2% by 2050. Second, a gradual shift in the economic structure from agriculture to other sectors has been assumed; the GDP share of agriculture will decrease from 55.7% in 1995, to 35.4% in 2020, and to 32.3% in 2050. In fact, it has been assumed that agriculture will grow at an annual rate of about 4%, and that the rate of increase in other sectors will be more than 7% until 2010 and decrease to 5.5% by 2020. In the longer-term, for the period 2020-2050, the growth rates of all sectors are expected to converge gradually towards a level of around 2%.

High growth assumption (Government's development plans)

The high growth assumption, on the other hand, consists of figures which are consistent with the forecast of the National Statistical Centre (NSC) conducted in 1997. The NSC carried out the economic forecast of the Lao PDR until 2020, and its results are used as the basis of the government's long-term development plans.

This assumption is characterised by the following features. First, Laos would maintain high growth rates until 2020; the real growth of GDP is assumed to be 7.5-8% until 2005, then it will gradually decrease to 7% by 2020. After this year, the real growth rate is assumed to decrease gradually to 3% by 2050. Second, as a result of the relatively low growth of agriculture, the GDP share of agriculture is expected to reduce rapidly; from 55.7% in 1995 to 26.1% in 2020, and to 18.2% in 2050. In fact, for the period until 2020, it is assumed that agriculture will grow at an annual rate of about 4%, and the other sectors, at more than 11% until 2010 and 7.5% by 2020. For the period

Table 2-1: Main economic indicators under two assumptions, 1995-2050

Year	Base case assumption					
	Real GDP growth (%)	Share of GDP agriculture (%)	Share of GDP non-agri. (%)	Inflation CPI (%)	Wage increase (%)	Interest rate (%)
1995	6.6	55.7	44.3	19.6	21.3	16.0
1996	6.8	53.4	46.6	13.0	14.8	16.0
1997	6.0	52.1	47.9	17.0	18.6	16.0
1998	1.0	50.9	49.1	15.0	15.0	16.0
1999	3.0	49.7	50.3	15.0	15.8	16.0
2000	5.0	48.5	51.5	10.0	11.3	12.0
2001	6.0	47.5	52.5	9.0	10.6	11.0
2002	6.0	46.4	53.6	8.0	9.6	10.0
2003	6.0	45.5	54.5	7.0	8.6	9.0
2004	6.0	44.6	55.4	6.0	7.5	8.0
2005	6.0	43.7	56.3	5.0	6.5	7.0
2010	6.0	40.0	60.0	5.0	6.5	7.0
2015	5.5	37.3	62.7	5.0	6.4	7.0
2020	5.0	35.4	64.6	5.0	6.3	7.0
2030	4.0	33.2	66.8	5.0	6.0	7.0
2040	3.0	32.4	67.6	5.0	5.7	7.0
2050	2.0	32.3	67.7	5.0	5.5	7.0

Year	High growth assumption					
	Real GDP growth (%)	Share of GDP agriculture (%)	Share of GDP non-agri. (%)	Inflation (%)	Wage increase (%)	Interest rate (%)
1995	6.6	55.7	44.3	19.6	21.3	16.0
1996	6.8	53.4	46.6	13.0	14.8	16.0
1997	7.5	51.7	48.3	17.0	18.9	16.0
1998	7.7	49.9	50.1	15.0	17.0	16.0
1999	8.0	48.2	51.8	15.0	17.1	16.0
2000	8.0	46.4	53.6	10.0	12.1	12.0
2001	7.9	44.8	55.2	9.0	11.1	11.0
2002	7.7	43.3	56.7	8.0	10.0	10.0
2003	7.6	41.9	58.1	7.0	9.0	9.0
2004	7.4	40.6	59.4	6.0	7.9	8.0
2005	7.3	39.4	60.6	5.0	6.9	7.0
2010	7.1	34.2	65.8	5.0	6.8	7.0
2015	7.0	29.7	70.3	5.0	6.8	7.0
2020	6.6	26.1	73.9	5.0	6.9	7.0
2030	5.4	21.1	78.9	5.0	6.9	7.0
2040	4.0	18.8	81.2	5.0	6.7	7.0
2050	3.0	18.2	81.8	5.0	6.5	7.0

2020-2050, the growth rate of all sectors is expected to converge gradually to a level of 3%.

As compared with the base case assumption, these forecasts assume that strong economic growth would continue and that the economic structure would change rapidly from a predominantly agricultural economy to a market-oriented economy. Nonetheless, the viability of this scenario depends on the substantial efforts in the strengthening of the privatisation, the labour market reform, and the development of the domestic capital market. In addition, in view of the heavy dependence of Lao PDR on Thailand for trade and investment, it should be noted that the government's development plans had been established before the current South-East Asian economic crisis emerged. Although the Government has not changed its target growth rates for the medium- and long-term, it has been widely recognised that the government's development plan could be disrupted by further economic turmoils in the neighbour countries, particularly in Thailand (see supplement). Therefore, the high growth assumption is considered to reflect a more optimistic view than the base case assumption in terms of the financial implications on the future status of the scheme.

Assumptions on inflation, wage increase and interest

The target values of inflation set by the Government were 7.5% for 1996 and 1997, and 4.5% for 1998. However, these targets have not been achieved in 1996 and 1997 (13% and 17%, respectively); and, it is expected that the inflation pressure will continue in 1998 (about 15%) due to the present economic instability in the South-East Asian countries. Taking these data into account, it is assumed that, under both sets of assumptions, inflation would drop from the 1997 level to 10% in 2000 and will gradually stabilize at the level of 5% by the year 2005. The same inflation rates have been assumed for the both assumptions.

Based on the growth assumptions, income growth has been estimated to be in consistent with employment growth. The growth rate of the employed population has been estimated by applying the employment elasticity rate to the real economic growth rate (the detailed explanation is given in the section 2.4). The difference between the real growth rate of economy and that of the employment can be ascribed to the increase in the productivity. In the present valuation, it has been assumed that the level of average real wage would be adjusted in line with the increase of productivity. The nominal wage increase has been obtained by taking the inflation into account. Consequently, the nominal wage increase in the private sector will be approximately 15%. Due to the expected lower inflation after 2000, the wage growth is assumed to decrease gradually to less than 7% in 2005 and the subsequent years.

In order to estimate the return from the investment of the reserves of the scheme, the real rate of return is assumed to equal 2% under both assumptions. This has been chosen by taking into account the average real deposit rates in recent years (source: the Bank of the Lao PDR). It should be noted that this is an assumption on the rate of return that can be achieved by the scheme and does not necessarily reflect the assumption on macro-economic return on the capital. The nominal rates have been obtained by taking into account the rates of inflation.

2.3 Population projection

The population projection provides a general framework for the development of the future labour force and the number of persons covered by the social security scheme. The NSC has carried out two population projections for the period 1995-2020. The constant variant projection ("alternative one") assumes that the mortality and fertility rates maintain their 1995 level; whereas, the medium-variant projection ("alternative two") assumes a gradual decline in both mortality and fertility rates.

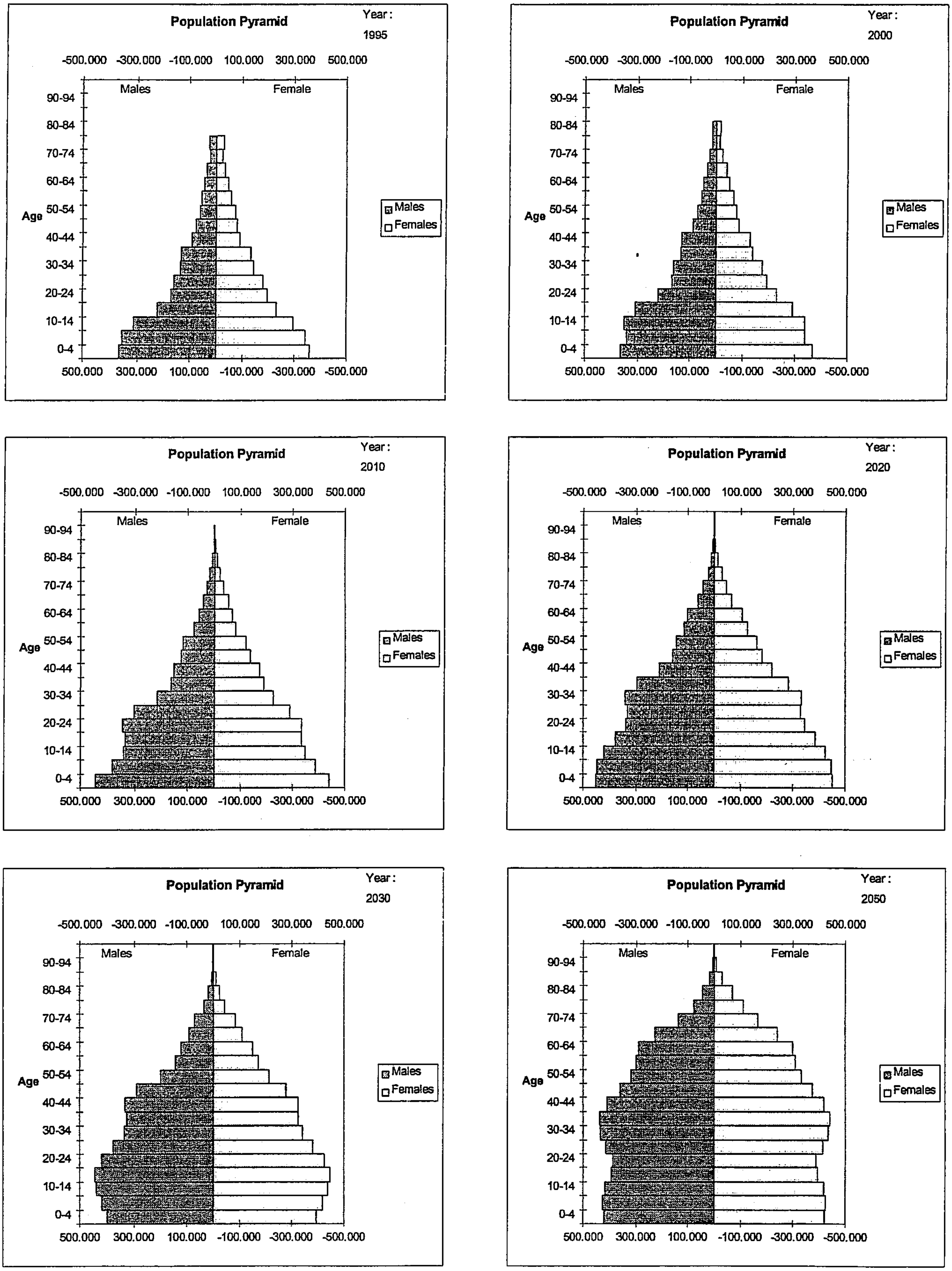
In the present valuation, the assumptions of the medium-variant projection by the NSC have been adopted. However, in order to evaluate long-term financial implications of the newly implemented scheme, the projection should cover a longer period. Therefore, these assumptions have been extended up to 2050, and the projection has been carried out by using the standard ILO population projection model.

Table 2-2 summarizes the main assumptions and results of the population projection, and Figure 2-2 shows the future change in the age structure (usually called the "population pyramid"). Taking into account the assumptions adopted by the NSC, it is expected that, between the year 1995 and 2050, the life expectancy at birth would increase from 49.5 years to 71.7 years for males, and from 52.5 years to 76.5 years for females. In parallel, the total fertility rate (TFR) is expected to decrease from the 1995 level of 5.6 children per woman to a level of 2.1 children per woman by 2030 and remain constant.

Table 2-2: Summary of the population projection, 1995 – 2055

Year	1995	2000	2010	2020	2030	2040	2050
Life Expectancy at Birth							
Males	49.5	53.5	58.5	63.3	66.8	69.5	71.7
Females	52.5	57.5	62.5	67.3	71.6	74.3	76.5
Total Fertility Rate (children per woman)							
	5.6	4.6	3.8	2.9	2.1	2.1	2.1
Population (in millions)							
	4.6	5.1	6.4	7.8	9.0	10.2	11.2
Annual population growth							
	2.5%	2.3%	2.3%	1.8%	1.2%	1.1%	0.8%
Age structure population							
0-14	44.2%	41.1%	36.5%	33.7%	27.6%	23.7%	22.6%
15-59	50.1%	53.4%	57.9%	59.6%	63.8%	65.3%	62.1%
60+	5.7%	5.6%	5.6%	6.7%	8.6%	10.9%	15.4%

Figure 2-2: Population pyramid of the Lao PDR, 1995-2050



The results of the ILO population projection model and those of the NSC's medium-variant projection show quite a similar demographic development until the year 2020. Further, the extended results by using the ILO population model show that the total population is expected to double by the year 2030 and exceed 10 million by 2040, and that the growth rate of the total population is expected to decrease from the current level of 2.5% to less than 1% by 2050.

As observed in other countries, a gradual ageing of the population structure is expected as a consequence of decreased mortality and fertility. Between 1995 and 2050, the percentage of population aged 0-14 years will decrease from 44.2% to 22.6%; whereas, that of the population aged 60 and over will increase from 5.7% to 15.4%. It should be noted that, compared with other Asian countries, the currently young population structure will lead to a relatively slow increase in the percentage of the population aged 60 and over. For instance, the rate of increase in the share of population aged 60 and over is estimated to be 2.6% in 2030, which is the same level as Vietnam in 1995.

2.4 Labour force and employment projections

2.4.1 Labour force

The labour force has been calculated by applying the estimated labour force participation rates to the population by age group. As the 1995 Census shows a significant difference in the participation rates between the rural and urban areas, the labour force in these areas has been estimated separately in this valuation.

Tables 2-3 and 2-4 show the results of the labour force projection. According to these tables, Lao PDR will have a large labour supply in the coming years. Also, from these tables one can find that the annual growth rate of the labour force is more than that of the total population by about 0.5%-points.

The labour force participation rates under the base case assumption are projected to be slightly higher than those under the high growth assumption, because the base case assumption leads to a larger share of agriculture in the rural areas, where labour force participation rates are generally high.

2.4.2 Employment

Employment has been estimated on the basis of real growth and productivity assumptions. In general, the real GDP growth is attributed to an increase in employment and that in productivity per worker. Therefore, if the future GDP growth is given, the increase in the rate of employment can be determined by specifying the rate of attribution of production growth to the employment growth. This rate of attribution is called employment elasticity of the real growth - for example, an elasticity of 0.7 means that a real growth of GDP of 1% is divided into an employment growth of 0.7% and a productivity increase of 0.3%.

Table 2-3: Projection of the labour market balance and the covered population, 1995-2050 (base case assumption)

(in thousands)

Year	1995	1996	1997	1998	1999	2000	2005	2010	2015	2020	2030	2040	2050
(A) Total population	4,575	4,680	4,787	4,896	5,007	5,121	5,733	6,421	7,145	7,842	9,048	10,179	11,210
(B) Population 10 and above	3,157	3,264	3,373	3,484	3,596	3,708	4,231	4,767	5,371	6,047	7,423	8,540	9,517
(C) Labour force	2,222	2,289	2,360	2,436	2,515	2,598	3,041	3,494	3,952	4,436	5,486	6,377	6,941
(D) Employed	2,166	2,219	2,268	2,300	2,344	2,407	2,809	3,232	3,692	4,177	5,147	5,986	6,533
of which													
agriculture	1,853	1,890	1,927	1,953	1,987	2,038	2,362	2,691	3,047	3,423	4,158	4,752	5,065
non-agriculture	313	328	341	347	357	369	447	541	645	754	989	1,234	1,468
(E) Unemployed (C-D)	56	70	91	136	172	191	232	262	260	259	340	391	409
(F) Labour force participation rate (C:B)	70.4%	70.1%	70.0%	69.9%	70.0%	70.1%	71.9%	73.3%	73.6%	73.4%	73.9%	74.7%	72.9%
(G) Unemployment rate (E:C)	2.5%	3.1%	3.9%	5.6%	6.8%	7.3%	7.6%	7.5%	6.6%	5.8%	6.2%	6.1%	5.9%
<u>Covered population</u>													
Private sector workers	-	-	-	-	89	94	134	184	234	289	414	562	725
(as a % of employed in non-agriculture)	0.0%	0.0%	0.0%	0.0%	25.0%	25.5%	30.0%	33.9%	36.2%	38.2%	41.9%	45.5%	49.4%
Civil servants	70	70	70	70	70	70	71	79	87	96	117	143	174
(as a % of employed in non-agriculture)	22.4%	21.3%	20.5%	20.1%	19.6%	18.9%	16.0%	14.6%	13.5%	12.7%	11.8%	11.6%	11.9%

Table 2-4: Projection of the labour market balance and the covered population, 1995-2050 (high growth assumption)

(in thousands)

Year	1995	1996	1997	1998	1999	2000	2005	2010	2015	2020	2030	2040	2050
(A) Total population	4,575	4,680	4,787	4,896	5,007	5,121	5,733	6,421	7,145	7,842	9,048	10,179	11,210
(B) Population 10 and above	3,157	3,264	3,373	3,484	3,596	3,708	4,231	4,767	5,371	6,047	7,423	8,540	9,517
(C) Labour force	2,222	2,289	2,359	2,431	2,506	2,584	3,002	3,425	3,839	4,282	5,301	6,171	6,716
(D) Employed	2,166	2,219	2,277	2,340	2,406	2,474	2,843	3,253	3,695	4,177	5,134	5,910	6,466
of which													
agriculture	1,853	1,890	1,933	1,977	2,021	2,067	2,311	2,562	2,802	3,040	3,433	3,653	3,716
non-agriculture	313	328	344	364	385	408	533	691	893	1,137	1,701	2,257	2,750
(E) Unemployed (C-D)	56	70	82	91	100	110	158	172	143	105	167	261	250
(F) Labour force participation rate (C:B)	70.4%	70.1%	69.9%	69.8%	69.7%	69.7%	70.9%	71.9%	71.5%	70.8%	71.4%	72.3%	70.6%
(G) Unemployment rate (E:C)	2.5%	3.1%	3.5%	3.7%	4.0%	4.3%	5.3%	5.0%	3.7%	2.5%	3.1%	4.2%	3.7%
<u>Covered population</u>													
Private sector workers	-	-	-	-	99	107	167	251	359	502	874	1,281	1,658
(as a % of employed in non-agriculture)	0.0%	0.0%	0.0%	0.0%	25.7%	26.3%	31.3%	36.3%	40.2%	44.2%	51.4%	56.8%	60.3%
Civil servants	70	70	70	72	74	76	88	106	128	155	223	311	422
(as a % of employed in non-agriculture)	22.4%	21.3%	20.3%	19.7%	19.2%	18.7%	16.5%	15.3%	14.4%	13.7%	13.1%	13.8%	15.3%

For the purpose of the present valuation, the employment elasticity of each sector has been drawn from the labour force survey 1994 which includes the World Bank estimates. Under the base case assumption, these data have been used throughout the projection period; whereas, under the high growth assumption, these data have been applied for the period until 2010. After this year, these elasticities are assumed to decrease in the long run. A breakdown of the employment elasticity rates by sector is presented in Annex D.

Consequently, under the base case assumption, the rate of growth of employment in non-agricultural private sector is estimated to be 5.6% by 2000, 3.5% by 2020, and 1.5% by 2050. A sustainable growth of employment will result in a gradual shift of employment structure from agriculture to non-agriculture sectors; the share of the latter in total employment will grow from 8.5% in 1995, to 14.2% in 2020 and to 18.7% in 2050.

Under the high growth assumption, the real growth will lead to a stronger growth in employment in non-agricultural private sector; the estimated rates of growth are 7.9% by 2000, 5.2% by 2020 and 1.6% by 2050. Accordingly, the change in employment structure is more significant and rapid; the share of the non-agricultural private sector in total employment grows from 8.5% in 1995, to 21.8% in 2020 and to 34.5% in 2050.

2.4.3 Covered population

Scheme for the employees in private sector

Currently, the formal sector workers represent only 42% of the total private sector workers in non-agriculture. No information is available for the future development of the formal sector. In the present valuation, both the informal and formal sectors are assumed to grow at the same rate in the beginning. Also, as the demand for employment in the private sector increases, the formal sector is expected to gradually absorb more informal sector workers. As a consequence, the share of the formal sector will increase from 42% in 1995, to 46% in 2020 and to 57% in 2050 under the base case assumption; from 42%, to 52% and to 69%, respectively, under the high growth assumption.

The initial coverage of the social security scheme for private sector is targeted at enterprises with 10 or more employees. It is intended to subsequently extend the coverage to enterprises with 5 or more employees, and later to the whole population. Since no relevant statistics are available, the number of workers in these enterprises has been assumed to remain at a fixed proportion of 94% of the total number of workers in the formal sector (i.e. with 5 or more employees).

Table 2-3 shows that the estimated growth in the covered population under the base case assumption is from 89,000 in 1999 to 289,000 in 2020, and to 725,000 in 2050. As shown in Table 2-4, under the high growth assumption, the covered population is expected to grow faster, from 99,000 in 1999 to 502,000 in 2020 and to 1,658,000 in 2050. The difference between these results reflects the uncertainty concerning the future change in employment structure.

Scheme for the civil servant

By means of organizational reforms and a retrenchment programme, the number of civil servants (excluding military and police) has reduced from 95,000 in 1989 to 71,000 in 1995. Under the base case assumption, the number of civil servants is expected to remain the same until 2005 and would grow at a rate of 2% per annum until 2050. Under the high growth assumption, the number of civil servants is assumed to grow at a an average rate of 3.5% per annum until 2050.

Tables 2-3 shows that under the base case assumption, the covered population will increase from 71,000 in 1995, to 96,000 in 2020, and to 174,000 in 2050. On the other hand, Table 2-4 shows that under the alternative assumption, the covered population will grow faster, from 71,000 in 1995 to 155,000 in 2020 and to 422,000 in 2050.

2.5 Financing systems

2.5.1 Financing of short-term benefits

Of the existing benefit provisions, health care benefits (in kind) and cash benefits paid under sickness, maternity, birth, death and employment injury branches are of short-term nature and are usually not paid over a long period of time (except for the periodical payment in the case of permanent employment injury).

For short-term benefits, the "pay-as-you-go system" (PAYG system) is usually adopted as the financing system. Under this system, the contribution rate is assessed on a year-by-year basis in such a way that the annual contributions would be sufficient to meet the expected expenditure (benefits and administration costs) in the relevant year. In practice, the contribution rate is set higher than the expected cost rate by a small margin. This margin is usually set aside to build up a small contingency reserve to prepare for any unforeseen rise in expenditure or fall in income due to sudden economic changes, enabling a smooth payment of benefits.

2.5.2 Financing of long-term benefits

Unlike short-term benefits, pension benefits are payable for life, once awarded at the retirement (moreover, upon the death of the pensioner they may be transferred to the survivors). Thereby, long-term liabilities of these benefits need to be taken into consideration. The relative level of expenditure increases as the scheme matures, especially in accordance with the ageing process of the population structure. Keeping the above facts in view, it is necessary to estimate the long-term development of benefits and consider the most suitable system to finance these liabilities.

In addition to the PAYG system, the following financial systems which involve the accumulation of certain reserves have been widely acknowledged and applied to the social security schemes in several countries.

Level premium system

Under this system, the contribution rate is calculated as the ratio of the present value of the total expenditure to the present value of the total insurable earnings over a sufficiently long time (for instance 50 years or even longer), and this constant contribution rate is applied to the scheme. Because the contribution rate under this system is higher than the PAYG contribution rate in the early stage of the implementation of the scheme, a considerable amount of reserves are accumulated during that period. In addition to the contribution income, these reserves, as well as their investment returns, are used for the future payment of benefits. If the return on investment is lower than the assumed interest rate, then the contribution rate will have to be increased earlier. Therefore, under this system, efficient investment of reserves is essential for the long-term financial viability of the scheme.

Scaled premium system

This system is an intermediate approach between the PAYG system and the level premium system. Under this system, the contribution rate is fixed as a certain percentage of insurable earnings for a defined period (called the equilibrium period). By the end of this period, the contribution rate is re-assessed by taking into account certain financial conditions (e.g. maintaining the reserve at certain months of expenditure, keeping the reserve non-decreasing) and accordingly, the contribution rate is raised to a higher level. This process is repeated until the contribution rate becomes stable.

This permits an accumulation of reserves, which can stabilize the contribution rate in the long run by virtue of the investment income on the reserves. The flexibility of this system provides the possibility of gradually increasing the contribution rate in a way suitable to the economic development, i.e. in light of the affordability of contributions from workers and employers and the potential of the capital market for investing the accumulated reserves.

Although the level of reserves under this system is lower than that under the level premium system with a long-term period of equilibrium, the accumulated reserves are still significant. Thus sound investment and fully functioning capital markets are also prerequisites for this financial system.

Chapter 3: Actuarial analysis of the private sector scheme

3.1 Policy formulation

The Labour Law, promulgated in April 1994, provides the legal framework for the social security system for employees in the private sector. This law, however, stipulates only the employers' obligation to establish social security funds and to provide benefits for sickness, maternity, employment injury and retirement; however, the details of benefit design and financial management were entrusted to a complementary Decree on the Social Security.

The Social Security Reform Steering Committee was established in 1996 to discuss policy options for the implementation of the scheme. The Steering Committee approved a draft Social Security Decree, which envisages a phased implementation of a fully fledged social security system. After the approval by the Prime Minister, the Decree will come into force and the scheme is to be implemented within one year of the date of enforcement. The major decisions made by the Steering Committee are in the following:

- It is planned to extend the mandatory coverage of the scheme gradually, to correspond with the economic development of Lao PDR. Initially, the scheme covers enterprises with 10 or more employees. Within five years of implementation, the coverage will be extended to enterprises with 5 or more employees; and, in ten years, to all employees in the private sector.

- According to the decisions made by the Steering Committee, the benefit provisions prescribed in the Decree include health care, sickness benefit, maternity benefit, birth grant, death grant, employment injury, as well as pensions (old-age, survivors' and invalidity).

- The coverage is planned to be extended to all employees including the public sector employees and the benefits are provided against all social risks at a later stage (e.g. by 2010). By the same time the Social Security Decree and the legislations on the public sector will be integrated into a new Social Security Law.

3.2 Actuarial valuation of the short-term benefits

This section aims at determining the contribution rate for the short-term benefits under the PAYG system.

3.2.1 Base data

In the absence of empirical data on the incidence rates of sickness, pregnancy and work injury, a survey was organised and conducted by the Actuary. For this purpose, 45 enterprises were sampled from different industrial sectors, and 26 enterprises replied to the questionnaires. After screening for consistency, replies from 23 enterprises (with 2,400 employees) were used as the basic data for cost estimates.

Table 3-1 shows the main results of this survey. The first column shows the average values (the basic data were weighed according to the relative sizes of the sectors of industry); and, the second column, the values of upper limit of 95%-confidence interval[7] of incidence rate of maternity, sickness and employment injuries. Further detailed description and results of the inquiry are given in Appendix B.

Table 3-1: Summary of the survey results

	Average value	Upper limit *
The number of female employees who ceased work during last year because of pregnancy (as a % of total employees)	6.2%	9.0%
The number of absent days from work because of sickness (as a % of total working days)	4.1%	5.5%
The number of absent days from work (longer than 30 days) because of sickness (as a % of total working days)	0.6%	1.1%
The number of employees who were involved in work injury or occupational disease (as a % of total employees)	0.4%	0.8%

*) Upper limit of 95%-confidence interval

3.2.2 Estimation of PAYG cost rates

In this subsection, the PAYG cost rate, i.e. the benefit expenditure expressed as a percentage of the total insurable earnings, is evaluated for each short-term benefit. It should be noted that the rate of contribution collection has been assumed to be 80%, taking into account of non-compliance, intermittent unemployment or under-declaration of contributions.

[7] The probability that an indicator takes the value outside that range is less than 5%.

Health care

The health care benefit covers the active insured workers, their dependent spouses and children younger than 18 years of age (25 years if students), and retired workers who pay voluntary contributions for health care. The eligible persons are entitled to preventive, curative and rehabilitative services which are included in the defined list of covered services. Medical care and treatment in case of maternity and employment injuries are included in this branch.

Health care providers receive the capitation amount from the scheme based on the number of insured persons. The amount of the capitation will be set in negotiation with the Ministry of Health. Additional payments will be made to meet costs of special treatment and emergency cases. As no reliable data are available on hospital utilisation and medical cost, after discussions with the health care consultant of this project, the initial contribution rate is temporarily set at 3.0%.

The following calculation attempts to roughly estimate the possible amount of the capitation. We assume that:

- The average insurable earnings are 72 thousand Kip per month in 1999 (base case assumption). The density for contribution collection is 80%.

- The percentage of married workers is 70%. A married couple has, on average, three children.

- To meet the costs of special and emergency cases, which are not covered by the capitation, 10% of contribution income is set aside.

A simple calculation[8] shows that a contribution rate of 3% would enable the scheme to provide a capitation of about 410 Kip per month per eligible person for health insurance in 1999 prices[9]. It is strongly suggested that the contribution rate for the health care, as well as the capitation amount, be reviewed to reflect the actual cost of medical care within two years of the inception of the scheme, when reliable data are supposed to be obtained.

Sickness

The sickness cash benefit is payable to the insured workers who are unable to work due to (non-work related) sickness or accident. The amount is equal to 60% of the average salary of the last six months. This benefit is payable after the exhaustion of the

[8] Capitation amount = 72,000 Kip × 0.8 × 3% ÷ (1+0.7+0.7×3) × 0.9 = 409 Kip.

[9] By taking into account the recent high inflation, the average insurable earnings is estimated 113,000 Kip per month. Under this assumption the possible capitation amount is estimated to be 642 Kip.

employers' obligatory sickness payments required by the Labour Law (30 days in a calender year). The costs for medical treatment are covered by the health care provisions.

As shown in Table 3-2, the estimated PAYG cost rate of the sickness benefit is 0.842% in total. This rate comprises of the following:

- From the survey, the upper limit of absence from work due to sickness in excess of 30 days is 1.1% of total working days[10]. Therefore, the PAYG rate of normal sickness is calculated as 0.825%.

- In addition, if a female worker is not able to work after she has received the maternity benefit for the maximum period of 3 months, then she is entitled to the sickness benefit. In order to reflect this in the contribution rate, it has been assumed that 10% of female workers are absent from work for one extra month. The additional PAYG cost rate concerning this benefit is estimated to be 0.017%.

Maternity

The maternity cash benefit is payable to female insured workers who interrupt work because of pregnancy or maternity. The amount is equal to 70% of the average salary of the last six months, and is paid for a maximum period of three months. The medical care for maternity is covered by the health care branch.

Table 3-3 shows that the estimated PAYG cost rate of the maternity benefit is 0.592%. The number of the newborns has been estimated by multiplying the age-specific fertility rates with the female workers by age. In addition, the fertility rates of working women are assumed to be lower than the average rates by 40 per cent[11]. By dividing the expected number of newborn by the total number workers, the incident rate of maternity of female workers was estimated to be 3.3%.

Birth grant

The birth grant is payable to female insured workers and dependent spouses of male insured workers at confinement. The amount is flat-rate and set at 60% of the monthly minimum wage per child.

Table 3-4 indicates that the PAYG cost rate is estimated as 0.339%. The same assumptions as maternity grant have been made. As this grant is also payable to the spouses of insured workers, it has been assumed that 90% of male workers are married.

[10] The survey results show that the average absence due to sickness (excluding maternity) was 4.1% and the upper limit was 5.5%. These figures are comparable with statistics in other countries.

[11] The gross fertility rate of female workers is estimated at 10.5%. Reflecting the young age composition of female insured workers, this rate is higher than that of NSC statistics of about 9.8% in the whole non-agricultural private sector, and that of the survey results (with average 6.2%, and the statistical upper limit, 9.0%).

Table 3-2 : Estimation of the PAYG cost rate of the sickness benefit

Normal sickness		
(A)	Benefit rate	60%
(B)	Average length of sickness in excess of 30 days (per year)	1.1%
(C)	Density for contribution	80%
(D)	PAYG cost rate [= (A)*(B)/(C)]	<u>0.825%</u>
Transfer from maternity benefit		
(E)	Benefit rate	60%
(F)	Incidence rate of maternity of female workers	3.3%
(G)	Length of maternity leave in excess of 3 months (= 1 month per year)	0.8%
(H)	Average wage differential of female workers	81%
(I)	Density for contribution	80%
(J)	PAYG cost rate [= (E)*(F)*(G)*(H)/(I)]	<u>0.017%</u>
(K)	Total [= (D)+(J)]	**0.842%**

Table 3-3 : Estimation of the PAYG cost rate of the maternity benefit

(A)	Benefit rate	70%
(B)	Incidence rate of maternity of female workers	3.3%
(C)	Length of maternity leave (= 3 months per year)	25%
(D)	Average wage differential of female workers	81%
(E)	Density for contribution	80%
(F)	PAYG cost rate [= (A)*(B)*(C)*(D)/(E)]	**0.592%**

Table 3-4 : Estimation of the PAYG cost rate of the birth grant

(A)	Benefit rate	60%
(B)	Incidence rate of maternity of female workers and spouses of male workers	13%
(C)	Reference period for calculating the benefit (= 1 month)	8%
(D)	Percentage of minimum wage to the average wage	43%
(E)	Density for contribution	80%
	PAYG cost rate [= (A)*(B)*(C)*(D)/(E)]	**0.339%**

Then, the average fertility rates have been applied to estimate the incident rate of maternity.

Death grant

A death grant is payable upon the death of an insured worker, or a spouse or a child of the insured worker, equivalent respectively to six months', three months' or two months' of earnings in each case.

Table 3-5 illustrates the estimated PAYG cost rate of this benefit is 0.359% in total. The following points have been taken into account:

- The number of deceased workers has been estimated by applying the age specific mortality rates to the insured population.

- In estimating the death of spouses and children of insured workers, the assumed marriage rates (men 90%, women 60%) and assumed number of children have been used in conjunction with the mortality rates.

Employment injury

The employment injury benefit is payable in case of work-related accident or disease. As indicated in Table 3-6, the PAYG cost rate of this benefit will show a gradual increase over time. The estimated PAYG cost rate is 0.508% in 2000 but is expected to increase to 0.944% in 2010, due to the accumulation of the periodical payment cases. The estimation methods can be explained as follows:

- In the case of temporary incapacity, the benefit equal to 100% of the insured earnings is paid for the first 6 months, and 60% of the insured earnings is paid for the next 12 months. In order to evaluate the cost of this benefit, the upper limit of frequency of work accidents (0.8%) has been used as the incidence rate[12]. It has been assumed that the average duration is 5 months and the average benefit rate is equal to 90%. As a result, the PAYG cost rate for this component is calculated as 0.375%.

- The SSO pays funeral benefit, carers benefit and medical care benefit. However, the funeral benefit is not payable when the death grant is awarded at the same time. For example, this is the case when an insured worker dies as a result of a work-related accident or illness. The carers benefit is payable for cases that require constant attendance; and the medical care benefit is paid, if necessary, to

[12]In the survey results, there were only 5 cases of temporary incapacity, 1 case of death due to work accident and no permanent disability was reported. The average frequency of work accidents during last year was 0.4% with an upper bound of 0.8%.

Table 3-5 : Estimation of the PAYG cost rate of the death grant

On the death of workers		
(A)	Gross death rate of workers	0.39%
(B)	Reference period for calculating the benefit (= 6 months)	50%
(C)	Density for contribution	80%
(D)	PAYG cost rate [= (A)*(B)/(C)]	0.246%
On the death of spouses of workers		
(E)	Gross death rate of spouses of workers	0.26%
(F)	Reference period for calculating the benefit (= 3 months)	25%
(G)	Density for contribution	80%
(H)	PAYG cost rate [= (E)*(F)/(G)]	0.082%
On the death of children of workers		
(I)	Gross death rate of children of workers	0.15%
(J)	Reference period for calculating the benefit (= 2 months)	17%
(K)	Density for contribution	80%
(L)	PAYG cost rate [= (I)*(J)/(K)]	0.032%
(M)	Total [= (D)+(H)+(L)]	**0.359%**

Table 3-6 : Estimation of the PAYG cost rate of the employment injury benefit

Temporary incapacity		
(A)	Average benefit rate	90%
(B)	Incident rate	0.8%
(C)	Average duration of benefits (= 5 months)	42%
(D)	Density for contribution	80%
(E)	PAYG cost rate [= (A)*(B)/(C)]	0.375%
Costs of funeral benefit, carers benefit, medical care benefit		
(F)	PAYG cost rate (global rough estimate)	0.050%
Permanent disability		
(G)	PAYG cost rate in 2000 (projection result)	0.073%
(H)	PAYG cost rate in 2010 (projection result)	0.460%
Survivors' benefit		
(I)	PAYG cost rate in 2000 (projection result)	0.010%
(J)	PAYG cost rate in 2010 (projection result)	0.059%
(K)	Total (in 2000)	**0.508%**
(L)	Total (in 2010)	**0.944%**

supplement the health care benefit. In view of the difficulty in establishing correct estimates related to these three benefits, a global rough estimate of 0.05% of the total insurable earning is set aside to finance these benefits.

- In the case of permanent disability, payment (of pensions) is made on a periodic basis. The benefit is calculated by multiplying the percentage of permanent loss of working capacity with 67.5% of the average salary of the last twelve months. In order to estimate the cost of this benefits, the number of beneficiaries has been drawn from the long-term projection results, which show that the estimated PAYG cost rate is 0.073% in 2000 but will increase to 0.46% in 2010. Since there are few beneficiaries at the outset of the scheme, the expenditure remains low, but in the long run, it is expected to increase steadily.

- The cost of survivors' benefit has been estimated in the same way as that of permanent disability benefit. The results of long-term projection show that the estimated PAYG cost rate is 0.01% in 2000 but will increase to 0.059% in 2010.

Summary

The contribution rates for the short-term benefits are summarised in Table 3-7. It should be noted that these figures represent net rates to cover the benefit payment and that administrative costs are not included.

Table 3-7: Summary of PAYG contribution rates for short-term benefits
(as a percentage of insurable earnings)

Benefit	PAYG rate
Health care	3.000
Sickness	0.842
Maternity	0.592
Birth grant	0.339
Death grant	0.359
Employment injury	0.508 (2000) 0.944 (2010)
Total	5.640 (2000) 6.076 (2010)

3.2.3 Recommended contribution rates of short-term benefits

In view of the results obtained in the previous section, the contribution rates which are applied to the scheme need to be established. In order to allocate the resources, the following rules have been stipulated by the draft Decree:

- The contributions are shared by the workers and employers, with the workers' portion not exceeding a half of the total. In principle, contributions should be shared equally; however, it should be noted that the contingencies related to work injury and accident are fully attributed to the employers' responsibility. Therefore, it is recommended that the contributions be shared equally by workers and employees, with an exception of the employment injury, where the contributions are paid by the employers.

- The benefits are paid from four funds, comprising of (i) the health care fund, (ii) the short-term cash benefits fund (maternity, sickness, birth grant, and death grant), (iii) the employment injury fund, and (iv) the pensions fund.

- The administrative costs should not be more than 10% of the total contribution income. The administrative costs are attributed to each fund, as illustrated in Table 3-8.

Table 3-8: Recommended initial contribution rates of short term benefits

		Inclusive administrative cost	Worker	Employer
Health care	3.0%	3.3%	1.65%	1.65%
Cash benefits 1)	2.2%	2.4%	1.20%	1.20%
Employment injury 2)	0.6%	0.7%	-	0.70%
	5.8%	**6.4%**	**2.85%**	**3.55%**
Administrative cost	0.6%			
	6.4%			

1) sickness, maternity, birth and death grant
2) To be gradually raised to phase the future increase in expenditure

Taking into account these conditions, the contributions shown in Table 3-8 are recommended upon the implementation of the scheme[13].

The following remarks should be addressed:

- It is expected that the cost of employment injury will increase to a level of around 1% by 2010. Therefore, this contribution rate should be gradually raised so that the expenditure can be adequately met.

- The estimation of these contributions involves a certain unavoidable margin of error due to incomplete data base. In addition, the scheme is subject to the risk of unexpected economic and demographic changes, which may result in an increase in expenditure or a fall in revenue. Therefore, as soon as reliable empirical data are available - within 2 to 3 years after the implementation of the scheme, these rates should be re-evaluated and adjusted if necessary[14].

- These rates have been determined under the PAYG system, however, from a conservative point of view, a slight margin has been assumed. It is strongly suggested that any surplus should be used to build up contingency reserves, enabling smooth payment of benefits.

- It is particularly important for a new scheme to collect contributions and pay benefits in full and in time. An efficient administration is crucial for ensuring effective scheme management.

- The administrative expenses concern the operation of the scheme management. Therefore, the costs for the establishment of the SSO before the inception of the scheme have not been taken into account in the above contribution rates.

3.2.4 Financial projections of the short-term benefits

In order to illustrate future expenditure of the scheme as estimated in the previous section, short-term projections until the year 2005 have been carried out. Tables 3-9 and 3-10 show the main results under the base case and high growth assumptions, respectively.

[13] It should be noted that these rates are slightly different from the preliminary results presented at the Steering Committee in January 1998. These rates reflect updated information obtained later and further revision of basic data.

[14] In this respect, the Steering Committee expressed concerns about the political difficulties in raising contribution rates in the future. However, it should be stressed that the long-term viability of the scheme can be ensured only by full enforcement of cost containment measures suggested by regular financial reviews.

Table 3-9: Estimated expenditure on short-term benefits, 1999-2005 (base case assumption)

Year	1999	2000	2001	2002	2003	2004	2005
Number of workers	**89,100**	**94,300**	**100,400**	**106,600**	**113,000**	**134,400**	**142,100**
Total number of days for which sickness benefits are paid	**294,000**	**311,000**	**331,000**	**352,000**	**373,000**	**444,000**	**469,000**
Number of covered population by health care	**339,000**	**358,000**	**382,000**	**405,000**	**429,000**	**511,000**	**540,000**
Number of beneficiaries							
- Maternity benefit	800	3,200	3,300	3,400	3,500	3,800	3,800
- Birth grant	-	12,000	12,400	12,800	13,200	14,400	14,900
- Death grant	-	400	400	500	500	600	600
- Work injury	300	400	400	500	600	700	800
FINANCIAL PROJECTION (in million Kip)							
Total salaries	**77,047**	**90,814**	**106,768**	**124,152**	**142,816**	**182,712**	**205,888**
Expenditure							
- Health care	1,156	2,724	3,203	3,725	4,284	5,481	6,177
- Sickness benefit	324	765	899	1,045	1,203	1,538	1,734
- Maternity benefit	117	538	612	688	763	887	961
- Birth grant	-	308	352	398	447	527	580
- Death grant	-	326	387	456	533	652	784
- Work injury	335	467	625	809	1,016	1,366	1,645
- Administration costs	193	513	608	712	825	1,045	1,188
Total	**2,125**	**5,640**	**6,687**	**7,834**	**9,070**	**11,496**	**13,069**
PAYG-CONTRIBUTION RATES (percentage of salaries)							
- Health care	1.50%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
- Sickness benefit	0.42%	0.84%	0.84%	0.84%	0.84%	0.84%	0.84%
- Maternity benefit	0.15%	0.59%	0.57%	0.55%	0.53%	0.49%	0.47%
- Birth grant	0.00%	0.34%	0.33%	0.32%	0.31%	0.29%	0.28%
- Death grant	0.00%	0.36%	0.36%	0.37%	0.37%	0.36%	0.38%
- Work injury	0.44%	0.51%	0.59%	0.65%	0.71%	0.75%	0.80%
- Administration costs	0.25%	0.56%	0.57%	0.57%	0.58%	0.57%	0.58%
Total	**2.76%**	**6.21%**	**6.26%**	**6.31%**	**6.35%**	**6.29%**	**6.35%**

Note: Assumed date of implementation is 1 January 1999

Table 3-10: Estimated expenditure on short-term benefits, 1999-2005 (high growth assumption)

Year	1999	2000	2001	2002	2003	2004	2005
Number of workers	**98,900**	**107,300**	**116,200**	**125,600**	**135,600**	**154,900**	**166,800**
Total number of days for which sickness benefits are paid	**326,000**	**354,000**	**383,000**	**414,000**	**447,000**	**511,000**	**550,000**
Number of covered population by health care	**376,000**	**408,000**	**442,000**	**477,000**	**515,000**	**589,000**	**634,000**
Number of beneficiaries							
- Maternity benefit	800	3,500	3,700	3,900	4,100	4,600	4,900
- Birth grant	-	13,400	14,300	15,300	16,300	18,400	19,600
- Death grant	-	400	400	500	500	600	600
- Work injury	300	400	500	600	600	800	900
FINANCIAL PROJECTION (in million Kip)							
Total salaries	**83,832**	**101,713**	**122,121**	**145,057**	**170,436**	**210,030**	**241,626**
Expenditure							
- Health care	1,257	3,051	3,664	4,352	5,113	6,301	7,249
- Sickness benefit	353	856	1,028	1,221	1,435	1,768	2,034
- Maternity benefit	126	603	710	827	952	1,149	1,292
- Birth grant	-	345	408	480	557	679	773
- Death grant	-	365	430	500	577	696	791
- Work injury	365	517	702	922	1,171	1,539	1,867
- Administration costs	210	574	694	830	981	1,213	1,401
Total	**2,312**	**6,311**	**7,637**	**9,132**	**10,786**	**13,346**	**15,407**
PAYG-CONTRIBUTION RATES (percentage of salaries)							
- Health care	1.50%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
- Sickness benefit	0.42%	0.84%	0.84%	0.84%	0.84%	0.84%	0.84%
- Maternity benefit	0.15%	0.59%	0.58%	0.57%	0.56%	0.55%	0.53%
- Birth grant	0.00%	0.34%	0.33%	0.33%	0.33%	0.32%	0.32%
- Death grant	0.00%	0.36%	0.35%	0.34%	0.34%	0.33%	0.33%
- Work injury	0.44%	0.51%	0.57%	0.64%	0.69%	0.73%	0.77%
- Administration costs	0.25%	0.56%	0.57%	0.57%	0.58%	0.58%	0.58%
Total	**2.76%**	**6.21%**	**6.25%**	**6.30%**	**6.33%**	**6.35%**	**6.38%**

Note: Assumed date of implementation is 1 January 1999

The following observations can be made:

- The result in the first year involves some uncertain factors. First, annual expenditure in the first year depends largely on the exact implementation date of the scheme. Second, the entitlement condition requires certain months of contributions to be made.

- Under both assumptions the PAYG cost rates increase slowly from about 6.2% in 2000 to 6.4% in 2005. The increase is mainly due to the gradual accumulation of periodical payment of employment injury benefit.

- Under the high growth assumption, the number of workers and beneficiaries will grow more rapidly than those under the base case assumption. However, the proportion of the covered population receiving benefits (as percentage of the active population) is approximately the same under both assumptions.

3.3 Actuarial valuation of the long-term pension benefits

3.3.1 Design of pension benefits

The main characteristics of the proposed pension benefits are summarised below. A detailed description has been given in Annex A.

Old-age pension

- The qualifying condition for old age pension requires contributions for five years. In case a retired worker is not entitled to pensions, the accrued contributions will be refunded as a lump-sum.

- The normal pensionable age is 60 years. However, pensions may be payable by maximum 5 years before or after the normal pensionable age. In this case the pension amount is reduced or increased at the rate of 0.5% per month[15].

- The amount of the old age pension is calculated by multiplying the benefit rate to the reference salary. The benefit rate is the sum of the accrual rate of 1.5% for each year of contribution; the reference salary is the average insurable salary over the whole working period, revalued at the current wage level. Therefore, an

[15] It should be noted that the early or late retirement has not been taken into account in projections. However, since the rate of reduction or an increment (0.5% per month) is an actuarially fair rate, there would be no long-term financial implications unless the assumed mortality rates or interest rate change

average worker with 30 years contributions will receive the benefit rate of 45% [16]; and, a worker with 45 years contributions (from age 15 to age 60) will get 67.5%.

- As a transition measure, additional pension credits are granted for workers who are older than 30 years of age at the outset of the scheme. For workers aged 45 and over, additional 15 contribution years on the basis of the minimum wage (more specifically, 0.8 pension points) are validated. For workers aged 44 and under, the additional contribution years are reduced linearly by 1 year per age.

Invalidity pension

- The qualifying condition for invalidity pension requires contributions for five years. In case a retired worker is not entitled to pensions, the accrued contributions will be refunded as a lump-sum. At age 60, the invalidity pension is regarded as old-age pension.

- The amount of invalidity pension is calculated in the same way as the old age pension. However, the number of years between the age of invalidity and the normal pensionable age is validated as contribution period.

Survivors' pension

- Upon the death of an active insured worker, an adaptation benefit is payable to the surviving family for one year following the death. This benefit equals 80% of the insured earnings of the worker during the last year before the death of the worker.

- Upon the death of active or retired insured workers (after the expiration of the adaptation benefit in case of death of an active worker), survivors' pension is payable. If the deceased was a pensioner, the base amount is equal to the pension in payment; however, if the deceased had not received pensions, the base amount is calculated in accordance with the formula for invalidity pension. The total survivors' pension cannot be more than the base amount.

- Survivors' pension is payable to the widow if she is 45 years old or over, or if she is handicapped or unable to work; it is payable to the widower if he is handicapped or unable to work. The amount of pension is equal to 60% of the base amount. Orphans' pension is payable to the children up to age 18 (or 25, if

[16] ILO Social Security (Minimum Standards) Convention No. 102 (1952) stipulates that the level of old-age pension for an average retired worker with 30 years service should be at least 40% of his/her previous earnings.

engaged in full-time education). The amount of pension is equal to 20% of the base amount.

3.3.2 Long-term cost estimates under the base case assumption

In the first step of the actuarial valuation, the future expenditure under the proposed benefit design has been estimated. The results are presented in the following three sets of projections. First, the demographic projections estimate the number of future contributors and pensioners of each category. Second, the financial projections estimate the amount, expressed in Kip, of the total insurable earnings and the amounts of benefits attributable to different categories of beneficiaries. Third, the per capita average amounts are calculated from the demographic and financial projections.

It should be noted that the analysis of this and the next sections is made under the base case assumption as it is considered to represent the most plausible scenario of the long-term demographic and economic development of Lao PDR. However, in order to examine the effect of variant assumption, the valuation results under the high growth assumption are set out in section 3.3.5.

In order to analyse the projection results, the following financial indicators are used.

- The PAYG cost rate, which is defined as the total expenditure expressed as a percentage of the total insurable earnings. This indicator can be analysed further as the product of the following two factors:

- The "demographic ratio", which is the number of pensioners in a year as a proportion of the covered population in the same year; and,

- The "system replacement ratio", which is the average pension paid in a year as a proportion to the average insurable earnings in that year.

Table 3-11 shows the results of demographic and financial projections under the base case assumption. The following observations can be made:

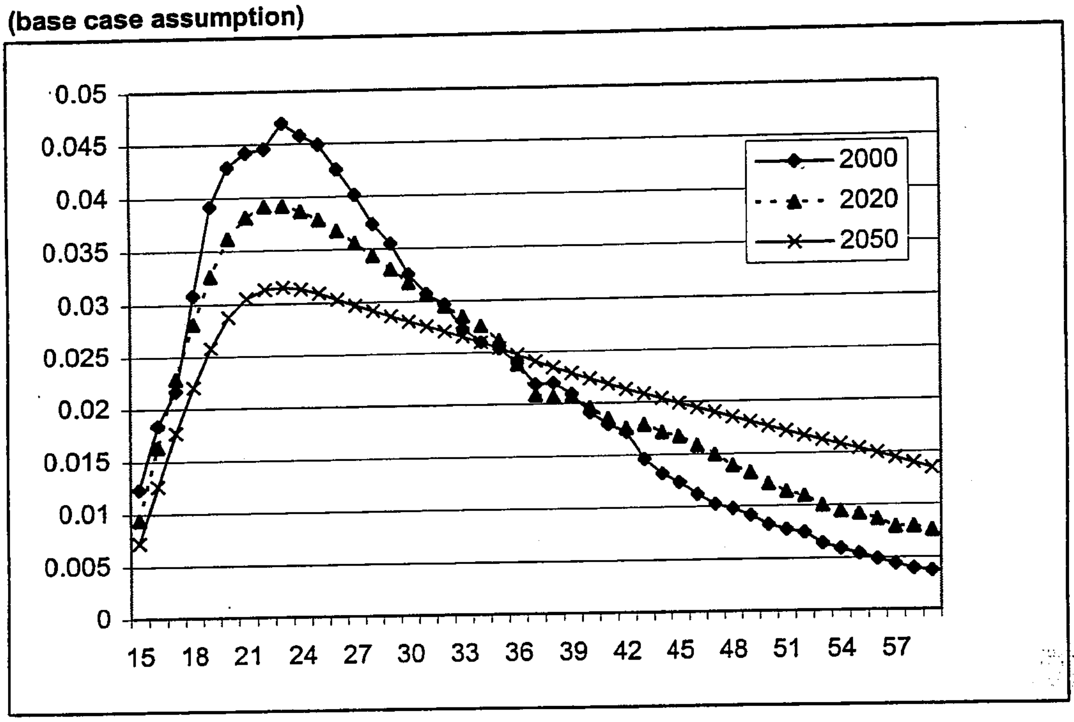
- The demographic ratio shows a steady increase. It will continuously increase by 0.6-1.2%-points every year. By 2020, this ratio will increase to 15% (about 6.5 active workers support one retired worker); and, by 2050, it will reach slightly less than 30% (about 3.5 active workers support one retired). This reflects the increase in the number of pensioners and a gradually slower growth of the insured population. (Figure 3-1 shows the age structure of the active members for selected years.)

Table 3-11: Estimated beneficiaries and expenditure of the private sector scheme, 1999-2050 (base case assumption)

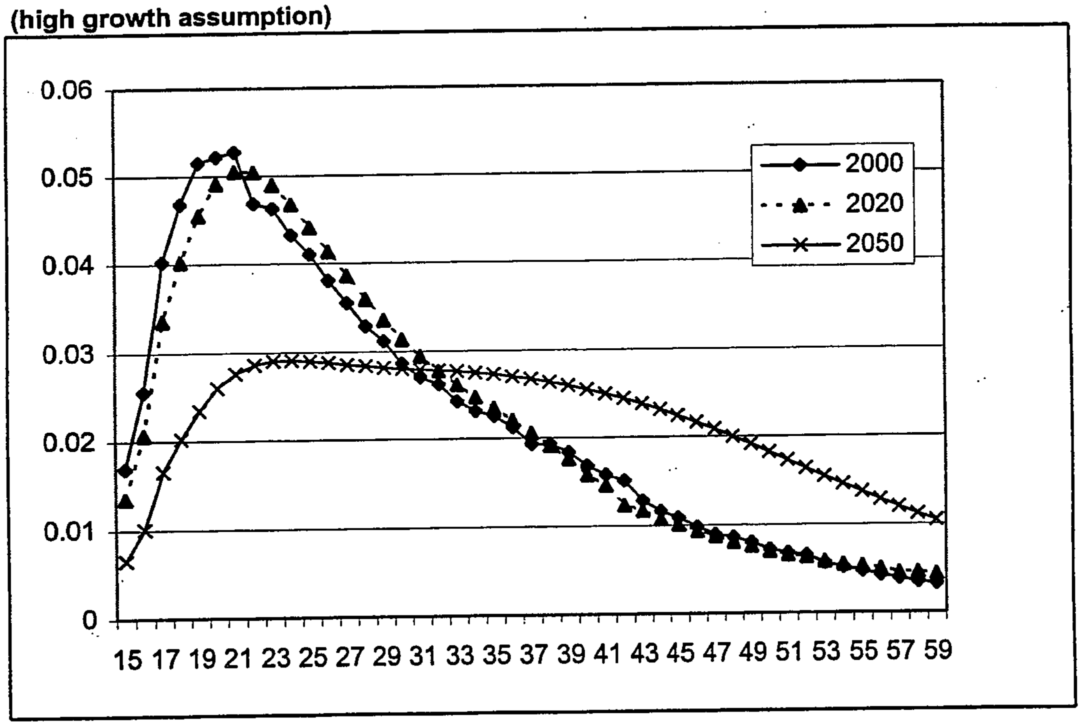
Year	1999	2000	2001	2002	2003	2004	2005	2010	2020	2030	2040	2050
DEMOGRAPHIC PROJECTION												
(A) Insured workers	**89,100**	**94,300**	**100,400**	**106,600**	**113,000**	**126,800**	**134,100**	**183,600**	**288,500**	**414,100**	**561,700**	**725,400**
(B) Beneficiaries	-	**1,200**	**2,500**	**3,900**	**5,200**	**6,800**	**8,400**	**17,800**	**44,100**	**82,400**	**137,500**	**214,200**
-old age pension	-	400	800	1,300	1,700	2,300	2,900	6,600	20,100	43,500	81,400	139,300
-survivors pension	-	600	1,200	1,900	2,500	3,200	4,000	8,100	17,000	27,800	41,000	56,300
-invalidity pension	-	200	500	700	1,000	1,300	1,500	3,100	7,000	11,100	15,100	18,600
-lumpsum	-	-	-	-	-	-	-	-	-	-	-	-
(C) Demographic ratio	**0.0%**	**1.3%**	**2.5%**	**3.7%**	**4.6%**	**5.4%**	**6.3%**	**9.7%**	**15.3%**	**19.9%**	**24.5%**	**29.5%**
-old age pension	0.0%	0.4%	0.8%	1.2%	1.5%	1.8%	2.2%	3.6%	7.0%	10.5%	14.5%	19.2%
-survivors pension	0.0%	0.6%	1.2%	1.8%	2.2%	2.5%	3.0%	4.4%	5.9%	6.7%	7.3%	7.8%
-invalidity pension	0.0%	0.2%	0.5%	0.7%	0.9%	1.0%	1.1%	1.7%	2.4%	2.7%	2.7%	2.6%
-lumpsum	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
FINANCIAL PROJECTION (in million Kip)												
(A) Total insurable earnings	**77,047**	**90,814**	**106,768**	**124,152**	**142,816**	**172,370**	**194,234**	**365,730**	**1,079,952**	**2,856,753**	**6,937,941**	**15,547,210**
(B) Benefit expenditure	-	**226**	**643**	**1,190**	**1,879**	**2,706**	**3,713**	**12,507**	**69,153**	**243,836**	**784,181**	**2,451,650**
-old age pension	-	87	201	354	556	810	1,137	4,419	32,353	134,578	504,524	1,789,078
-survivors pension	-	70	217	409	648	930	1,266	4,013	18,461	57,219	155,569	395,524
-invalidity pension	-	69	225	426	674	964	1,308	4,070	18,309	51,942	123,958	266,811
-lumpsum	-	0	0	1	1	2	2	5	29	96	130	237
(C) PAYG cost rate	**0.00%**	**0.25%**	**0.60%**	**0.96%**	**1.32%**	**1.57%**	**1.91%**	**3.42%**	**6.40%**	**8.54%**	**11.30%**	**15.77%**
-old age pension	0.00%	0.10%	0.19%	0.29%	0.39%	0.47%	0.59%	1.21%	3.00%	4.71%	7.27%	11.51%
-survivors pension	0.00%	0.08%	0.20%	0.33%	0.45%	0.54%	0.65%	1.10%	1.71%	2.00%	2.24%	2.54%
-invalidity pension	0.00%	0.08%	0.21%	0.34%	0.47%	0.56%	0.67%	1.11%	1.70%	1.82%	1.79%	1.72%
-lumpsum	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
AVERAGE AMOUNTS (monthly amount, in Kip)												
(A) Average insurable earnings	**72,000**	**80,200**	**88,600**	**97,000**	**105,300**	**113,300**	**120,700**	**166,000**	**311,900**	**574,900**	**1,029,300**	**1,786,100**
(B) Average pension amounts	-	**15,300**	**21,300**	**25,700**	**29,700**	**33,400**	**36,800**	**58,500**	**130,800**	**246,500**	**475,000**	**953,500**
-old age pension	-	18,200	20,700	23,500	26,600	29,800	33,100	55,500	134,100	257,900	516,600	1,070,100
-survivors pension	-	9,700	14,800	18,200	21,200	23,900	26,400	41,500	90,500	171,700	315,900	585,700
-invalidity pension	-	24,500	39,000	48,600	56,800	64,000	70,500	108,400	219,300	389,400	682,400	1,192,800
(C) System replacement ratio	**0.0%**	**19.1%**	**24.0%**	**26.5%**	**28.2%**	**29.5%**	**30.5%**	**35.2%**	**41.9%**	**42.9%**	**46.1%**	**53.4%**
-old age pension	0.0%	22.7%	23.4%	24.2%	25.3%	26.3%	27.4%	33.4%	43.0%	44.9%	50.2%	59.9%
-survivors pension	0.0%	12.1%	16.7%	18.8%	20.1%	21.1%	21.9%	25.0%	29.0%	29.9%	30.7%	32.8%
-invalidity pension	0.0%	30.5%	44.0%	50.1%	53.9%	56.5%	58.4%	65.3%	70.3%	67.7%	66.3%	66.8%

Figure 3-1: Age distribution of active population, 2000-2050

(base case assumption)



(high growth assumption)



- Owing to the initial credits granted for workers aged 45 years and over, the system replacement ratio is expected to increase sharply in the beginning. As there are more workers with a longer contribution period, the replacement ratio will grow to 42% by 2020 and 53% by 2050 (for old age pension 60%, survivors pension 33% and invalidity pension 67%).

- As a result of the development of these two factors, PAYG cost rate will increase continuously throughout the projection period. By the year 2050, the PAYG cost rate is expected to reach about 16%. The average increase of the PAYG cost rate is about 0.3%-points per annum.

3.3.3 Estimated fund operations

In the second step of the valuation, the fund operation of the scheme is simulated until the year 2050 in order to determine the future contribution rate. The results set out the estimated future income and expenditure, surplus and accumulated reserve.

In view of the discussion on the financial system in section 2.5, three schedules of future contribution rates illustrated in Table 3-12 below, have been examined. Figure 3-2 illustrates these contribution rates and PAYG cost rates.

Table 3-12: Three schedules of the future contribution rates

	Initial contribution rate (1999)	Increase in the contribution rate	Final contribution rate (2049)
Schedule A	2.0%	by 1.5%-points (every 5 years)	15.5%
Schedule B	3.0%	by 3.0%-points (every 10 years)	15.0%
Schedule C	10.0%	none	10.0%

Table 3-13 shows the estimated income and expenditure under the three contribution schedules. Figure 3-3 compares the expected amount of the reserves as a percentage of (nominal) GDP. Figure 3-4 illustrates the projected funding ratio. The funding ratio is defined as the amount of reserves at the beginning of the year divided by the amount of benefit incurred during the year.

Figure 3-2 : Comparison of three contribution schedules and the PAYG cost rates, 1999-2050

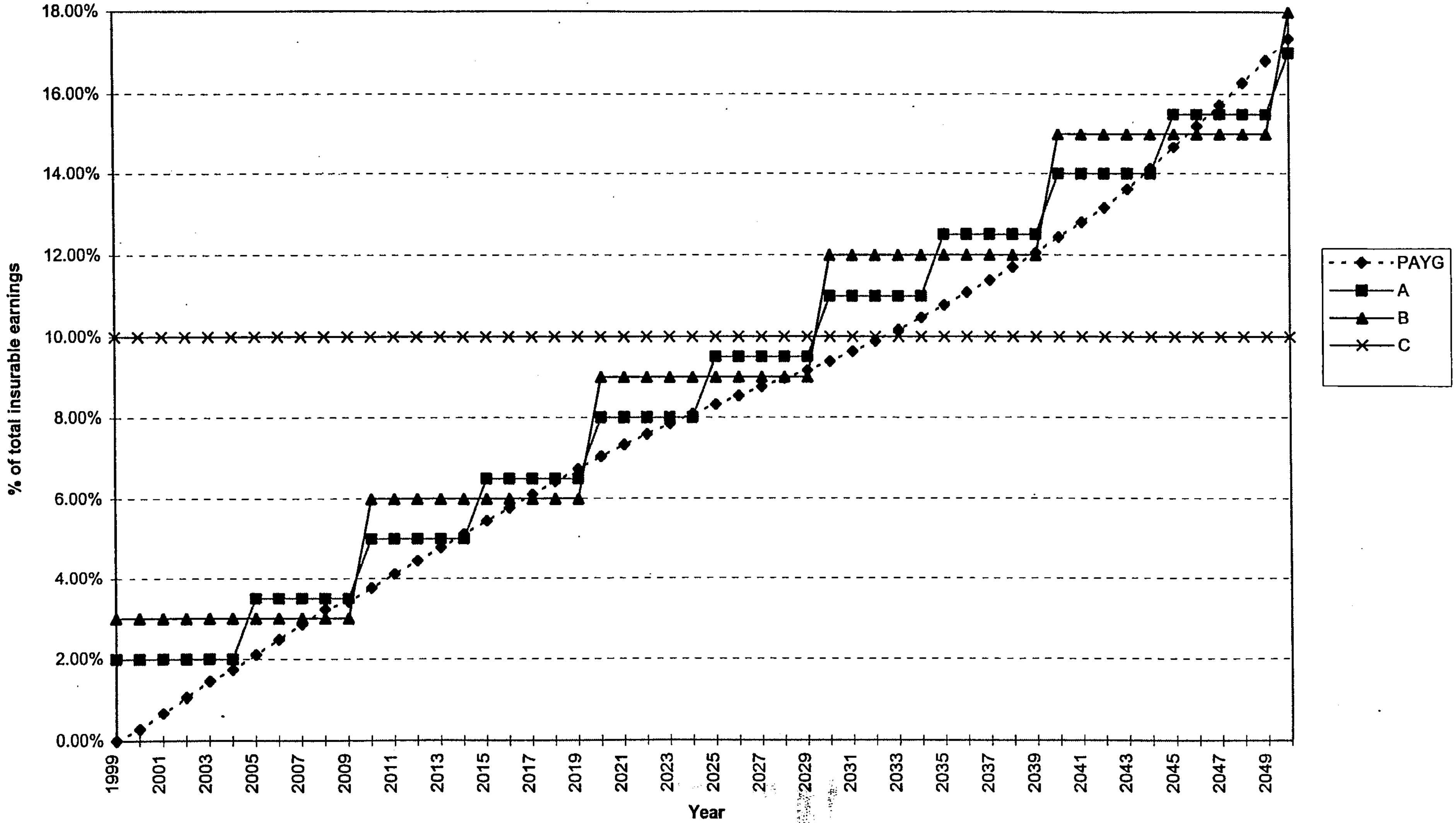


Table 3-13: Estimated income and expenditure of the private sector scheme, 1999-2050 (base case assumption)

(in million Kip)

Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	2020	2025	2030	2035	2040	2045	2050
Schedule A																				
(A) Income	1,664	2,110	2,602	3,084	3,539	4,160	7,583	8,669	9,834	11,072	12,919	20,082	45,072	92,619	179,923	337,116	609,914	1,062,700	1,779,943	2,837,208
-Contributions	1,541	1,816	2,135	2,483	2,856	3,447	6,798	7,656	8,616	9,685	11,398	18,286	41,536	86,396	168,755	314,243	562,027	971,312	1,628,091	2,643,026
-Investment	123	294	466	601	683	712	785	1,013	1,218	1,387	1,521	1,796	3,535	6,223	11,167	22,873	47,887	91,389	151,851	194,182
(B) Expenditure	0	249	707	1,308	2,067	2,977	4,084	5,413	7,016	8,916	11,110	13,758	34,830	76,068	147,741	268,219	484,351	862,599	1,540,556	2,696,816
-Benefits	0	226	643	1,190	1,879	2,706	3,713	4,921	6,378	8,105	10,100	12,507	31,664	69,153	134,310	243,836	440,319	784,181	1,400,506	2,451,650
-Administrative expenses	0	23	64	119	188	271	371	492	638	811	1,010	1,251	3,166	6,915	13,431	24,384	44,032	78,418	140,051	245,165
(C) Cash-flow (contribution-expenditure)	1,541	1,567	1,428	1,175	790	471	2,714	2,242	1,600	770	288	4,529	6,706	10,328	21,015	46,024	77,676	108,713	87,535	-53,790
(D) Surplus (A-B)	1,664	1,861	1,894	1,775	1,473	1,183	3,499	3,255	2,818	2,156	1,809	6,325	10,241	16,551	32,182	68,897	125,563	200,101	239,386	140,393
(E) Reserve at year-end	1,664	3,525	5,420	7,195	8,668	9,851	13,349	16,605	19,423	21,579	23,388	29,713	57,389	100,280	181,208	372,649	770,825	1,451,298	2,364,923	2,941,322
Contribution rate	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	3.50%	3.50%	3.50%	3.50%	3.50%	5.00%	6.50%	8.00%	9.50%	11.00%	12.50%	14.00%	15.50%	17.00%
PAYG cost rate (total expenditure)	0.00%	0.27%	0.66%	1.05%	1.45%	1.73%	2.10%	2.47%	2.85%	3.22%	3.41%	3.76%	5.45%	7.04%	8.32%	9.39%	10.77%	12.43%	14.67%	17.35%
Funding ratio	0.0	6.7	5.0	4.1	3.5	2.9	2.4	2.5	2.4	2.2	1.9	1.7	1.4	1.1	1.0	1.1	1.3	1.5	1.4	1.0
Reserve as a % of GDP	0.1%	0.1%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%	0.3%	0.3%	0.3%	0.3%	0.3%	0.4%	0.4%	0.5%	0.7%	0.9%	1.1%	0.9%
Schedule B																				
(A) Income	2,496	3,173	3,936	4,710	5,469	6,495	7,216	8,149	9,137	10,167	11,698	24,246	44,201	105,573	178,703	373,401	610,304	1,156,579	1,790,575	3,063,742
-Contributions	2,311	2,724	3,203	3,725	4,284	5,171	5,827	6,562	7,385	8,302	9,770	21,944	38,341	97,196	159,874	342,810	539,546	1,040,691	1,575,572	2,798,498
-Investment	185	448	733	986	1,184	1,324	1,389	1,587	1,752	1,866	1,928	2,303	5,860	8,377	18,830	30,590	70,758	115,888	215,002	265,245
(B) Expenditure	0	249	707	1,308	2,067	2,977	4,084	5,413	7,016	8,916	11,110	13,758	34,830	76,068	147,741	268,219	484,351	862,599	1,540,556	2,696,816
-Benefits	0	226	643	1,190	1,879	2,706	3,713	4,921	6,378	8,105	10,100	12,507	31,664	69,153	134,310	243,836	440,319	784,181	1,400,506	2,451,650
-Administrative expenses	0	23	64	119	188	271	371	492	638	811	1,010	1,251	3,166	6,915	13,431	24,384	44,032	78,418	140,051	245,165
(C) Cash-flow (contribution-expenditure)	2,311	2,475	2,496	2,416	2,218	2,194	1,743	1,149	369	-614	-1,340	8,186	3,511	21,128	12,133	74,591	55,195	178,092	35,016	101,682
(D) Surplus (A-B)	2,496	2,924	3,229	3,402	3,402	3,518	3,132	2,736	2,121	1,252	588	10,489	9,371	29,505	30,963	105,182	125,953	293,980	250,018	366,927
(E) Reserve at year-end	2,496	5,420	8,649	12,051	15,453	18,971	22,104	24,840	26,961	28,212	28,800	39,289	91,328	138,612	293,894	504,893	1,109,191	1,860,479	3,303,972	4,105,295
Contribution rate	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	6.00%	6.00%	9.00%	9.00%	12.00%	12.00%	15.00%	15.00%	18.00%
PAYG cost rate (total expenditure)	0.00%	0.27%	0.66%	1.05%	1.45%	1.73%	2.10%	2.47%	2.85%	3.22%	3.41%	3.76%	5.45%	7.04%	8.32%	9.39%	10.77%	12.43%	14.67%	17.35%
Funding ratio	0.0	10.0	7.7	6.6	5.8	5.2	4.6	4.1	3.5	3.0	2.5	2.1	2.4	1.4	1.8	1.5	2.0	1.8	2.0	1.4
Reserve as a % of GDP	0.1%	0.2%	0.2%	0.3%	0.3%	0.3%	0.4%	0.4%	0.4%	0.3%	0.3%	0.4%	0.5%	0.5%	0.7%	0.7%	1.1%	1.2%	1.5%	1.3%
Schedule C																				
(A) Income	8,321	10,610	13,280	16,096	18,975	22,844	25,758	29,764	34,251	39,254	46,366	52,889	97,214	167,126	273,225	429,983	651,058	940,794	1,277,755	1,564,265
-Contributions	7,705	9,081	10,677	12,415	14,282	17,237	19,423	21,873	24,616	27,672	32,566	36,573	63,902	107,995	177,637	285,675	449,622	693,794	1,050,382	1,554,721
-Investment	616	1,528	2,603	3,681	4,693	5,606	6,334	7,890	9,635	11,582	13,800	16,316	33,312	59,131	95,588	144,308	201,436	247,000	227,374	9,544
(B) Expenditure	0	249	707	1,308	2,067	2,977	4,084	5,413	7,016	8,916	11,110	13,758	34,830	76,068	147,741	268,219	484,351	862,599	1,540,556	2,696,816
-Benefits	0	226	643	1,190	1,879	2,706	3,713	4,921	6,378	8,105	10,100	12,507	31,664	69,153	134,310	243,836	440,319	784,181	1,400,506	2,451,650
-Administrative expenses	0	23	64	119	188	271	371	492	638	811	1,010	1,251	3,166	6,915	13,431	24,384	44,032	78,418	140,051	245,165
(C) Cash-flow (contribution-expenditure)	7,705	8,832	9,969	11,107	12,215	14,260	15,340	16,460	17,601	18,756	21,456	22,815	29,072	31,927	29,896	17,456	-34,729	-168,805	-490,175	-1,142,094
(D) Surplus (A-B)	8,321	10,361	12,573	14,788	16,909	19,867	21,674	24,351	27,235	30,338	35,256	39,131	62,383	91,058	125,485	161,764	166,707	78,195	-262,801	-1,132,551
(E) Reserve at year-end	8,321	18,682	31,255	46,042	62,951	82,818	104,491	128,842	156,077	186,416	221,672	260,803	523,728	919,821	1,476,080	2,214,578	3,061,730	3,691,164	3,230,483	-425,161
Contribution rate	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
PAYG cost rate (total expenditure)	0.00%	0.27%	0.66%	1.05%	1.45%	1.73%	2.10%	2.47%	2.85%	3.22%	3.41%	3.76%	5.45%	7.04%	8.32%	9.39%	10.77%	12.43%	14.67%	17.35%
Funding ratio	0.0	33.4	19.7	17.7	16.4	15.4	14.7	13.9	13.1	12.3	11.7	11.1	10.5	9.1	7.9	6.7	5.2	3.6	1.8	-0.1
Reserve as a % of GDP	0.3%	0.6%	0.8%	1.1%	1.3%	1.5%	1.7%	1.9%	2.1%	2.2%	2.4%	2.6%	3.1%	3.3%	3.4%	3.3%	3.0%	2.4%	1.5%	-0.1%

Figure 3-3: Estimated amount of reserves as a percentage of GDP under the base case assumption, 1999-2050

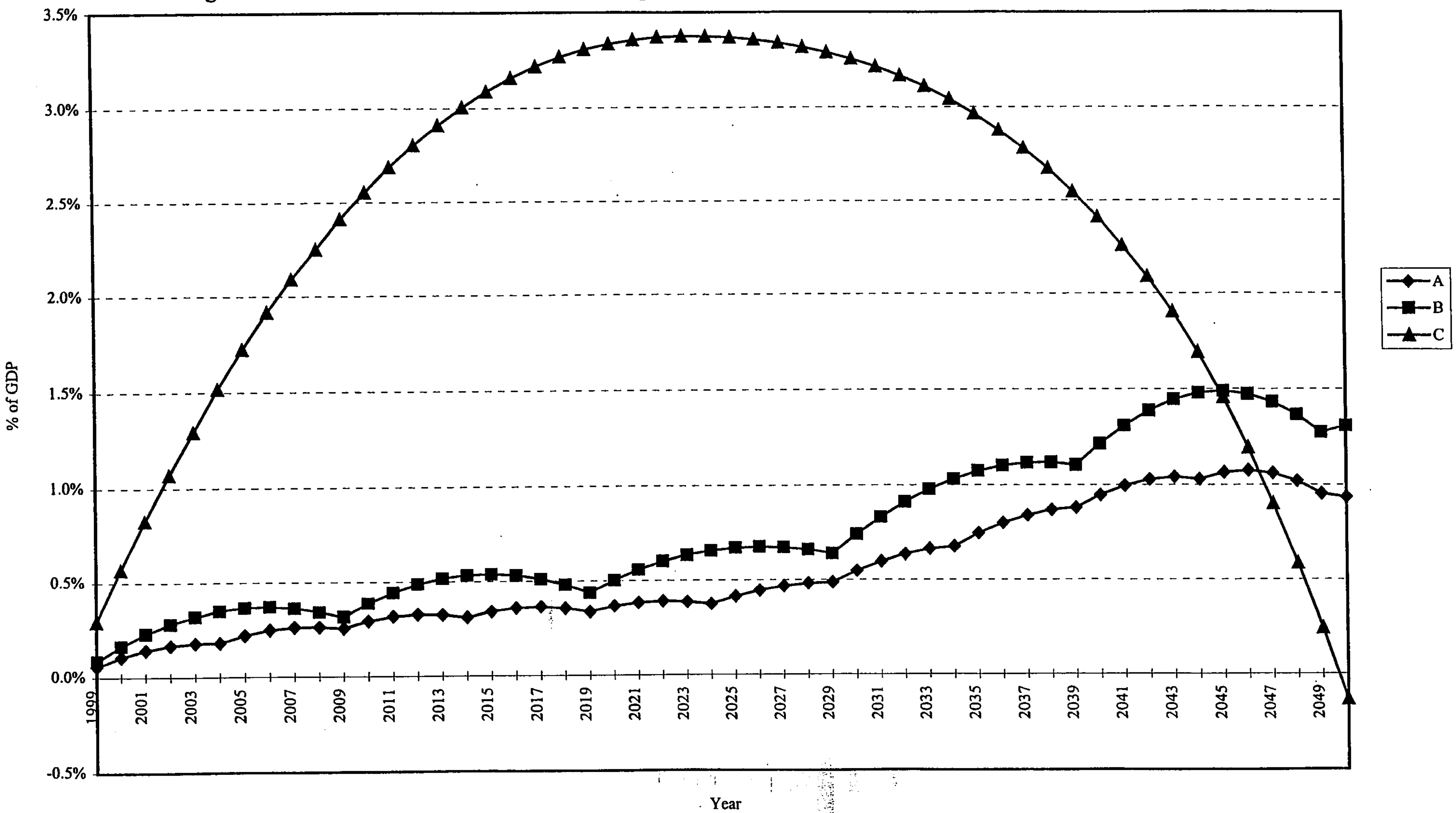
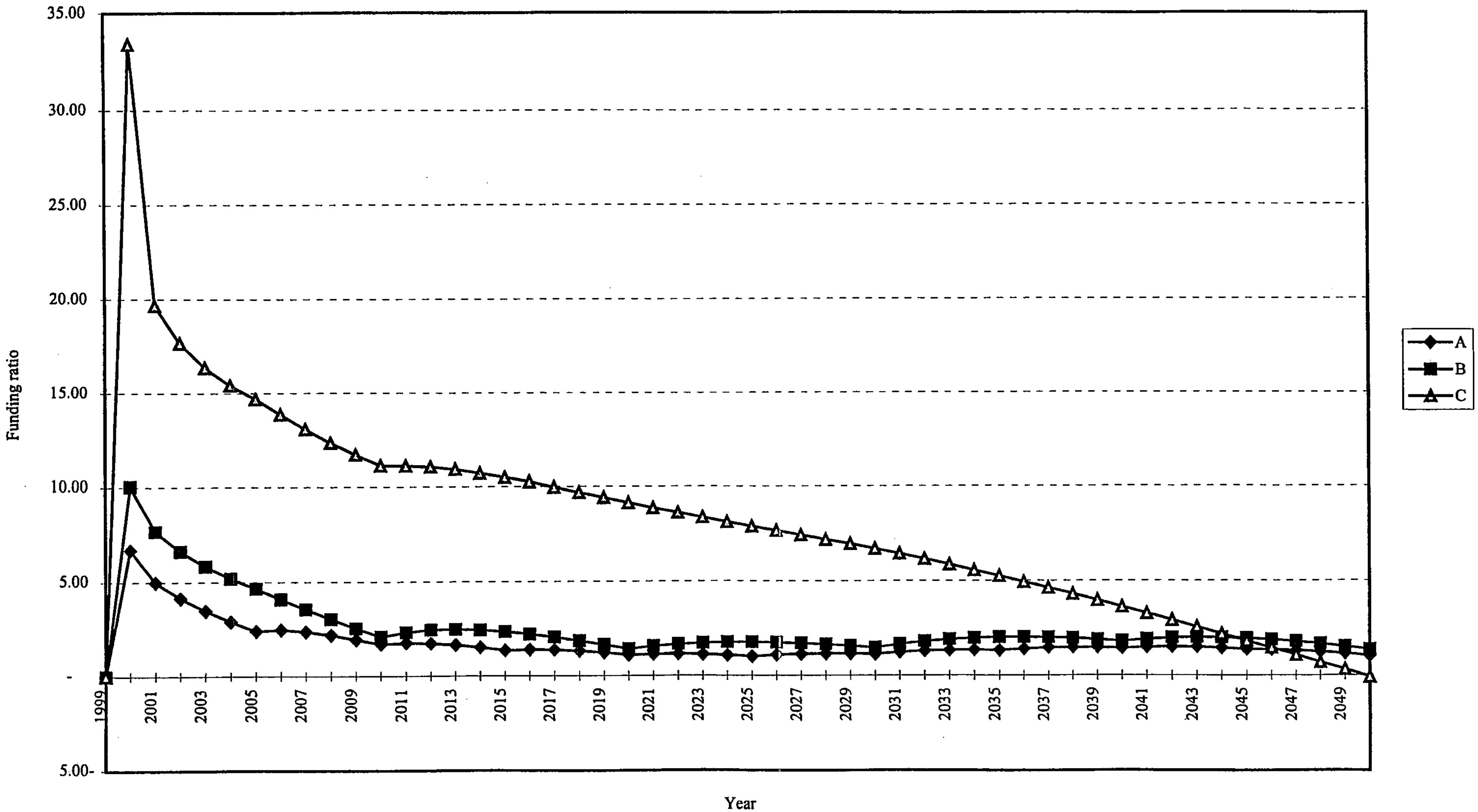


Figure 3-4: Estimated funding ratio under the base case assumption, 1999-2050



Note: Funding ratio = (Reserves at the beginning of the year) / (expenditure incurred during the year)

The main characteristics of these results can be summarised as follows:

Schedule A

- Under this Schedule, the initial contribution rate is set at 2.0%, then it is increased by 1.5%-points every 5 years. Ultimately, the contribution rate in 2049 is supposed to equal 15.5%. Given that the actuarial valuation is conducted every 5 years, this Schedule assumes that the contribution rate is reviewed every valuation year. In other words, this Schedule is based on the scaled premium with the equilibrium period of 5 years.

- The projection shows that the balance of the fund is expected to be in surplus throughout the projection period. The projection also indicates that the reserve of the fund is about 0.5% of the GDP by 2030, then it is expected to increase gradually to a level of 0.8% of the GDP. In terms of the expenditure, the funding ratio initially shows high rates (due to the initially low expenditure) but will stay about 2 years' expenditure by 2010, after that it is expected to decrease gradually to about 1 year's expenditure by 2050.

Schedule B

- Under this Schedule, the initial contribution rate is set at 3.0%, which will be increased by 3%-points every 10 years. The contribution rate in 2049 is 15.0%. This Schedule assumes that the contribution rate is fixed for two valuation periods. This is based on the scaled premium with the equilibrium period of 10 years.

- The projection results show similar development of income and expenditure to Schedule A. In further detail, as compared with Schedule A, the higher contribution rates in the early years will lead to a higher surplus, thus resulting in higher reserves (see the projection results shown in Figures 3-3 and 3-4).

Schedule C

- This Schedule assumes a level contribution rate of 10.0% throughout the projection years. Based on the estimated benefits and insured earnings, and the assumed interest rates, the level contribution rate for the next 50 years is calculated to be 10.0%. No future increase - at least for the next 50 years - is envisaged, provided the other factors develop as assumed.

- Unlike the previous two Schedules, the projection results under this Schedule show a quite rapid accumulation of the reserves in the early years. As shown in Figure 3-3, the relative level of reserves as a percentage of GDP will attain the peak at about 3.5% by 2025, then start declining slowly at first but rapidly as years go on. The projection results show that by 2035 the cash-flow (the difference of cash income and cash expenditure) is expected to turn negative, which means that the scheme has to liquidate part of its capital (the reserves and their interest). Furthermore, the projection results indicate that by 2045 the balance of the fund is estimated to be in deficit, and that, once the fund has a deficit and the contribution is not increased, the reserve will decrease sharply and will be exhausted within 5 years after the first year of deficit.

3.3.4 Choice of financial system and investment issues

For a newly implemented pension scheme - such is the case of this scheme - its expenditure is relatively low in early years of its operation. Under this situation, if the level premium system - Schedule C - is adopted, one may find it difficult to achieve a consensus on setting a high contribution rate at the initial stages of the scheme when almost no benefits are being paid and when the economy might not be developed enough to provide adequate profitable opportunities at reasonable risk for the investment of the reserves.

In general, the basic principles which govern the investment of social security are safety, yield and liquidity. However, the fund management does not often satisfy these criteria on investment. One of the reasons for this is attributed to the fact that the lack of sound governance of the scheme may render these principles secondary to political priorities which are different from social security. Another reason for the failure of investment is the non-existence of a properly functioning capital market. In this regard, developing countries - so is the case of Lao PDR- have particular problems in finding suitable investment opportunities which match up to the desirable criteria. In view of the fact that the long-term domestic capital market in Lao PDR has not yet fully developed, a large amount of reserve, as projected under Schedule C, may involve a considerable risk that it fails to be invested safely with maintaining its real value.

In the case of Lao PDR, its currently young population is expected to undergo a moderate ageing process in the future, therefore the scheme will be able to achieve a stable contribution rate at a reasonable level. Therefore, it is suggested that, as indicated under Schedules A and B, the initial contribution rate be set slightly higher than the PAYG cost rate, and that the accumulated reserve be kept at a relatively small size, which can be invested in accordance with the basic investment criteria. In the long run, however, it might be considered to increase the funding level as the capital market develops and becomes capable of absorbing more funds.

3.3.5 Sensitivity analysis

The valuation results depend on a number of demographic and economic assumptions underlying the actuarial projections. In order to indicate the degree of sensitivity of the overall result to an alternative set of assumptions, further projections have been made under the high growth assumption.

Table 3-14 shows the results of demographic and financial projections under the high growth assumption. The following observations can be made:

- The higher growth of private sector under this assumption will lead to more new entrants than the base case assumption. As a consequence, the ageing of the covered population will be moderate for the period 2020-2035. After 2035, the demographic ratio is expected to increase rapidly. By 2050, the demographic ratio will reach 20%.

- The projected system replacement ratio will show almost the same results as the base case assumption.

- The PAYG cost rate will increase gradually to 4.3% by 2020. After staying between 5% and 6% in 2020-2035, the PAYG cost rate will start increasing rapidly and reach 10.9% by 2050. The difference between the results under both assumptions is ascribed to the development of the demographic ratio.

Table 3-15 examines the financial implications of the three contribution schedules under the high growth assumption. It is evident that higher rates of growth of insured population and higher real rates of return on investments would result in lower PAYG cost rates and higher investment income. Under all Schedules, more surpluses are expected than the results under the base case assumption. Supported by favourable developments, the fund is expected to build up a substantial amount of reserves after 2020 even under the Schedules A and B. This suggests that if the high growth assumption were realized a more moderate increase of the contribution rate would be sufficient to ensure the long-term financial equilibrium after the year 2020. In the short- and mid-term, however, the two assumptions would not give rise to a significant deviation in the valuation results.

3.4 Conclusion

The actuarial analysis of the private sector scheme has led to the following observations:

- For the short-term benefits, a total contribution rate of 6.4% is recommended, comprising of 3.3% for the health care fund, 2.4% for the cash benefit fund and 0.7% for the employment injury fund. These contributions should be reviewed within 2 to 3 years after the implementation of the scheme when empirical data are available.

Table 3-14: Estimated beneficiaries and expenditure of the private sector scheme, 1999-2050 (high growth assumption)

Year	1999	2000	2001	2002	2003	2004	2005	2010	2020	2030	2040	2050
DEMOGRAPHIC PROJECTION												
(A) Insured workers	**98,900**	**107,300**	**116,200**	**125,600**	**135,600**	**154,900**	**166,800**	**250,800**	**502,200**	**874,400**	**1,281,400**	**1,658,200**
(B) Beneficiaries	-	**1,200**	**2,500**	**4,000**	**5,400**	**7,000**	**8,700**	**18,700**	**48,600**	**95,700**	**177,200**	**333,400**
-old age pension	-	400	800	1,300	1,700	2,300	2,900	6,600	20,100	43,800	93,300	207,500
-survivors pension	-	600	1,200	1,900	2,600	3,300	4,100	8,600	20,000	36,700	59,800	91,500
-invalidity pension	-	200	500	800	1,100	1,400	1,700	3,500	8,400	15,100	24,000	34,300
-lumpsum	-	-	-	-	-	-	-	-	100	100	100	100
(C) Demographic ratio	**0.0%**	**1.1%**	**2.2%**	**3.2%**	**4.0%**	**4.5%**	**5.2%**	**7.5%**	**9.7%**	**10.9%**	**13.8%**	**20.1%**
-old age pension	0.0%	0.4%	0.7%	1.0%	1.3%	1.5%	1.7%	2.6%	4.0%	5.0%	7.3%	12.5%
-survivors pension	0.0%	0.6%	1.0%	1.5%	1.9%	2.1%	2.5%	3.4%	4.0%	4.2%	4.7%	5.5%
-invalidity pension	0.0%	0.2%	0.4%	0.6%	0.8%	0.9%	1.0%	1.4%	1.7%	1.7%	1.9%	2.1%
-lumpsum	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
FINANCIAL PROJECTION (in million Kip)												
(A) Total insurable earnings	**83,832**	**101,713**	**122,121**	**145,057**	**170,436**	**210,030**	**241,626**	**505,188**	**1,971,943**	**6,857,635**	**20,081,897**	**50,407,233**
(B) Benefit expenditure	-	**230**	**668**	**1,250**	**1,979**	**2,887**	**3,984**	**13,941**	**84,417**	**335,104**	**1,314,123**	**5,478,338**
-old age pension	-	86	200	354	554	814	1,145	4,542	35,208	160,636	767,794	3,873,609
-survivors pension	-	70	223	425	675	981	1,346	4,495	23,845	87,756	287,347	901,439
-invalidity pension	-	73	243	469	747	1,086	1,486	4,885	25,218	86,216	258,193	701,917
-lumpsum	-	0	1	2	4	6	7	19	146	497	790	1,373
(C) PAYG cost rate	**0.00%**	**0.23%**	**0.55%**	**0.86%**	**1.16%**	**1.37%**	**1.65%**	**2.76%**	**4.28%**	**4.89%**	**6.54%**	**10.87%**
-old age pension	0.00%	0.08%	0.16%	0.24%	0.32%	0.39%	0.47%	0.90%	1.79%	2.34%	3.82%	7.68%
-survivors pension	0.00%	0.07%	0.18%	0.29%	0.40%	0.47%	0.56%	0.89%	1.21%	1.28%	1.43%	1.79%
-invalidity pension	0.00%	0.07%	0.20%	0.32%	0.44%	0.52%	0.62%	0.97%	1.28%	1.26%	1.29%	1.39%
-lumpsum	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%	0.00%	0.00%
AVERAGE AMOUNTS (monthly amount, in Kip)												
(A) Average insurable earnings	**70,600**	**79,000**	**87,600**	**96,200**	**104,800**	**113,000**	**120,700**	**167,900**	**327,200**	**653,600**	**1,306,000**	**2,533,200**
(B) Average pension amounts	-	**15,300**	**21,700**	**26,400**	**30,500**	**34,600**	**38,300**	**62,000**	**144,700**	**291,600**	**618,100**	**1,369,300**
-old age pension	-	18,000	20,600	23,400	26,500	30,000	33,300	57,000	146,000	305,300	686,100	1,555,800
-survivors pension	-	9,700	15,000	18,500	21,600	24,600	27,200	43,600	99,300	199,500	400,100	820,900
-invalidity pension	-	24,500	40,000	50,300	58,800	67,000	74,000	116,400	249,100	474,500	897,500	1,704,700
(C) System replacement ratio	**0.0%**	**19.4%**	**24.8%**	**27.4%**	**29.1%**	**30.6%**	**31.7%**	**36.9%**	**44.2%**	**44.6%**	**47.3%**	**54.1%**
-old age pension	0.0%	22.8%	23.5%	24.3%	25.3%	26.5%	27.6%	33.9%	44.6%	46.7%	52.5%	61.4%
-survivors pension	0.0%	12.3%	17.1%	19.2%	20.6%	21.8%	22.5%	26.0%	30.3%	30.5%	30.6%	32.4%
-invalidity pension	0.0%	31.0%	45.7%	52.3%	56.1%	59.3%	61.3%	69.3%	76.1%	72.6%	68.7%	67.3%

Table 3-15: Estimated income and expenditure of the private sector scheme, 1999-2050 (high growth assumption)

(in million Kip)

Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	2020	2025	2030	2035	2040	2045	2050
Schedule A																				
(A) Income	**1,811**	**2,358**	**2,967**	**3,592**	**4,217**	**5,074**	**9,461**	**11,071**	**12,863**	**14,860**	**17,808**	**28,294**	**74,229**	**183,028**	**427,466**	**945,099**	**1,969,908**	**3,856,738**	**7,078,548**	**12,291,793**
-Contributions	1,677	2,034	2,442	2,901	3,409	4,201	8,457	9,719	11,159	12,808	15,398	25,259	65,403	157,755	356,291	754,340	1,499,613	2,811,466	5,005,892	8,569,230
-Investment	134	324	525	691	808	874	1,004	1,352	1,704	2,052	2,410	3,035	8,826	25,272	71,175	190,759	470,295	1,045,272	2,072,655	3,722,564
(B) Expenditure	0	**253**	**734**	**1,375**	**2,177**	**3,176**	**4,383**	**5,862**	**7,662**	**9,768**	**12,305**	**15,335**	**40,568**	**92,858**	**190,940**	**368,615**	**712,151**	**1,445,535**	**3,013,953**	**6,026,172**
-Benefits	0	230	668	1,250	1,979	2,887	3,984	5,329	6,965	8,880	11,186	13,941	36,880	84,417	173,582	335,104	647,410	1,314,123	2,739,957	5,478,338
-Administrative expenses	0	23	67	125	198	289	398	533	697	888	1,119	1,394	3,688	8,442	17,358	33,510	64,741	131,412	273,996	547,834
(C) Cash-flow (contribution-expenditure)	1,677	1,782	1,708	1,526	1,232	1,025	4,074	3,858	3,497	3,040	3,093	9,925	24,835	64,897	165,350	385,725	787,462	1,365,930	1,991,939	2,543,058
(D) Surplus (A-B)	1,811	2,106	2,233	2,218	2,040	1,898	5,078	5,209	5,201	5,092	5,504	12,959	33,661	90,169	236,525	576,484	1,257,757	2,411,203	4,064,595	6,265,622
(E) Reserve at year-end	1,811	3,917	6,150	8,367	10,407	12,306	17,384	22,593	27,794	32,886	38,390	51,349	147,329	418,753	1,170,631	3,108,756	7,582,524	16,660,701	32,677,987	58,173,576
Contribution rate	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	3.50%	3.50%	3.50%	3.50%	3.50%	5.00%	6.50%	8.00%	9.50%	11.00%	12.50%	14.00%	15.50%	17.00%
PAYG cost rate (total expenditure)	0.00%	0.25%	0.60%	0.95%	1.28%	1.51%	1.81%	2.11%	2.40%	2.67%	2.80%	3.04%	4.03%	4.71%	5.09%	5.38%	5.94%	7.20%	9.33%	11.95%
Funding ratio	0.0	7.2	5.3	4.5	3.8	3.3	2.8	3.0	2.9	2.8	2.7	2.5	2.8	3.5	4.9	6.9	8.9	9.9	9.5	8.6
Reserve as a % of GDP	0.1%	0.1%	0.1%	0.2%	0.2%	0.2%	0.2%	0.3%	0.3%	0.3%	0.3%	0.4%	0.6%	1.0%	1.7%	2.7%	4.2%	5.9%	7.6%	9.1%
Schedule B																				
(A) Income	**2,716**	**3,545**	**4,486**	**5,477**	**6,493**	**7,880**	**8,951**	**10,339**	**11,867**	**13,550**	**16,024**	**33,890**	**72,312**	**205,303**	**421,321**	**1,024,715**	**1,955,713**	**4,101,034**	**7,063,620**	**12,946,759**
-Contributions	2,515	3,051	3,664	4,352	5,113	6,301	7,249	8,331	9,565	10,978	13,198	30,311	60,372	177,475	337,539	822,916	1,439,629	3,012,285	4,844,412	9,073,302
-Investment	201	494	822	1,125	1,380	1,579	1,702	2,008	2,302	2,572	2,825	3,578	11,940	27,828	83,782	201,799	516,085	1,088,750	2,219,208	3,873,457
(B) Expenditure	0	**253**	**734**	**1,375**	**2,177**	**3,176**	**4,383**	**5,862**	**7,662**	**9,768**	**12,305**	**15,335**	**40,568**	**92,858**	**190,940**	**368,615**	**712,151**	**1,445,535**	**3,013,953**	**6,026,172**
-Benefits	0	230	668	1,250	1,979	2,887	3,984	5,329	6,965	8,880	11,186	13,941	36,880	84,417	173,582	335,104	647,410	1,314,123	2,739,957	5,478,338
-Administrative expenses	0	23	67	125	198	289	398	533	697	888	1,119	1,394	3,688	8,442	17,358	33,510	64,741	131,412	273,996	547,834
(C) Cash-flow (contribution-expenditure)	2,515	2,799	2,929	2,977	2,936	3,125	2,866	2,469	1,903	1,210	894	14,977	19,804	84,617	146,598	454,301	727,477	1,566,749	1,830,459	3,047,130
(D) Surplus (A-B)	2,716	3,293	3,751	4,102	4,316	4,704	4,568	4,477	4,205	3,782	3,719	18,555	31,744	112,445	230,380	656,100	1,243,562	2,655,499	4,049,667	6,920,588
(E) Reserve at year-end	2,716	6,009	9,760	13,862	18,178	22,882	27,450	31,927	36,132	39,914	43,633	62,188	192,414	467,682	1,353,967	3,311,792	8,252,461	17,425,695	34,837,405	60,732,129
Contribution rate	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	6.00%	6.00%	9.00%	9.00%	12.00%	12.00%	15.00%	15.00%	18.00%
PAYG cost rate (total expenditure)	0.00%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%
Funding ratio	0.0	10.8	8.2	7.1	6.4	5.7	5.2	4.7	4.2	3.7	3.2	2.8	4.0	3.8	5.9	7.2	9.8	10.2	10.2	8.9
Reserve as a % of GDP	0.1%	0.2%	0.2%	0.3%	0.3%	0.3%	0.4%	0.4%	0.4%	0.4%	0.4%	0.5%	0.8%	1.2%	2.0%	2.9%	4.5%	6.2%	8.1%	9.5%
Schedule C																				
(A) Income	**9,054**	**11,853**	**15,115**	**18,666**	**22,422**	**27,522**	**31,639**	**37,228**	**43,619**	**50,937**	**61,390**	**71,473**	**148,449**	**296,062**	**569,453**	**1,056,010**	**1,878,823**	**3,179,384**	**5,051,806**	**7,493,252**
-Contributions	8,383	10,171	12,212	14,506	17,044	21,003	24,163	27,770	31,883	36,593	43,995	50,519	100,620	197,194	375,043	685,763	1,199,691	2,008,190	3,229,608	5,040,723
-Investment	671	1,682	2,903	4,160	5,378	6,519	7,476	9,459	11,736	14,344	17,396	20,954	47,829	98,868	194,410	370,247	679,132	1,171,194	1,822,198	2,452,528
(B) Expenditure	0	**253**	**734**	**1,375**	**2,177**	**3,176**	**4,383**	**5,862**	**7,662**	**9,768**	**12,305**	**15,335**	**40,568**	**92,858**	**190,940**	**368,615**	**712,151**	**1,445,535**	**3,013,953**	**6,026,172**
-Benefits	0	230	668	1,250	1,979	2,887	3,984	5,329	6,965	8,880	11,186	13,941	36,880	84,417	173,582	335,104	647,410	1,314,123	2,739,957	5,478,338
-Administrative expenses	0	23	67	125	198	289	398	533	697	888	1,119	1,394	3,688	8,442	17,358	33,510	64,741	131,412	273,996	547,834
(C) Cash-flow (contribution-expenditure)	8,383	9,919	11,478	13,131	14,866	17,827	19,780	21,908	24,222	26,826	31,690	35,184	60,052	104,336	184,103	317,149	487,539	562,654	215,655	-985,448
(D) Surplus (A-B)	9,054	11,600	14,381	17,291	20,245	24,346	27,256	31,367	35,957	41,169	49,086	56,138	107,881	203,204	378,513	687,395	1,166,671	1,733,849	2,037,853	1,467,080
(E) Reserve at year-end	9,054	20,654	35,035	52,326	72,571	96,917	124,173	155,540	191,497	232,666	281,752	337,890	761,120	1,563,436	3,063,753	5,818,060	10,624,791	18,183,869	27,961,427	36,995,922
Contribution rate	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
PAYG cost rate (total expenditure)	0.00%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%
Funding ratio	0.0	35.8	28.1	25.5	24.0	22.9	22.1	21.2	20.3	19.6	18.9	18.4	16.1	14.6	14.1	13.9	13.3	11.4	8.6	5.9
Reserve as a % of GDP	0.3%	0.6%	0.8%	1.0%	1.3%	1.5%	1.7%	1.9%	2.1%	2.3%	2.4%	2.6%	3.3%	3.9%	4.5%	5.1%	5.8%	6.4%	6.5%	5.8%

- For the pension benefits, the PAYG cost rate will increase continuously by about 0.3%-points every year, and it is expected to reach about 16% by the year 2050. This can be ascribed to the long-term transition of the following two factors. First, the demographic ratio will increase gradually and reach at a level of slightly less than 30% by 2050. Second, the system replacement ratio is expected to increase sharply in the beginning owing to the granted initial credits; in the long run, the replacement ratio will grow moderately to more than 50% by 2050.

- To determine the future contribution rates, the following three schedules have been investigated.

  (i) Under Schedule A, the initial contribution rate is set at 2.0%, then it is increased by 1.5%-points every 5 years (the contribution rate in 2049 is 15.5%). The projection shows that the balance of the fund is expected to be in surplus throughout the projection period, and that the fund is expected to retain reserves of less than 1% of the GDP, or about 1-2 years' expenditure.

  (ii) Under Schedule B, the initial contribution rate is set at 3.0%, which will be increased by 3%-points every 10 years (the contribution rate in 2049 is 15.0%). Compared with Schedule A, the higher contribution rates in the early years will result in a higher level of reserves.

  (iii) Under Schedule C, a level contribution rate of 10.0% is assumed for the next 50 years. The projection results show a quite rapid accumulation of the reserves in the early years. After attaining its peak at about 3.5% of GDP by 2025, the relative level of the reserve is estimated to decline. The projection results show that by 2035 the expenditure is not covered solely by contribution income; by 2045 the fund is estimated to be in deficit; and, by 2049 the reserve is expected to be depleted.

- In view of the not fully developed capital market in Lao PDR, and the gradual cost increase due to moderate ageing of the population, it is suggested that the contribution rate should be increased gradually with a relatively low level of funding.

- The projection results suggest that an initial contribution rate should be at least 2.0% and this rate should be increased by 1.5%-points every five years. Alternatively, with an initial contribution rate of 3.0% which would ensure the financial equilibrium for the next ten years, this rate would then have to be increased by 3.0%-points every ten years. Taking into consideration the need for long-term increase in the pension expenditure, the optimal schedule of contribution rate should be set out. In order to ensure the long-term financial viability of the scheme under economic changes, the actuarial valuation should be conducted at least every five years.

Chapter 4: Actuarial analysis of the public sector scheme

4.1 Current issues on the existing scheme

With respect to the social protection for public servants, a non-contributory scheme was first implemented in 1975, and a contributory Social Security Fund was established in 1992. The management of this Fund came under the Department of Social Security of the Ministry of Labour and Social Welfare (MOLSW) from 1994.

The system covers civil servants in both the central and provincial administration, and employees of mass organizations (e.g. Lao Federation of Trade Unions, Lao Women Union, Lao Red Cross). Army and police are covered by a separate scheme financed by special budget allocation; therefore, workers in this category are not included in the scope of this study.

The current public sector scheme provides comprehensive protection against a broad range of contingencies. These provisions reflect, to a great extent, conditions of service rather than social security concepts, indicating a tendency to provide secure employment to public servants under a centrally planned economy. (Annex B provides the summary of provisions of the current scheme for public sector workers.)

The present provisions display its inconsistency with the government's economic policies and public sector reform programmes. This will tend to inhibit the development of an efficient public sector labour force, since higher salaries and the planned introduction of a social security system in the private sector will draw skilled people away from the civil service. The introduction of a contributory system requires a change in the character of the social security provisions for public servants; in fact, this has not yet been fully implemented either in law or in practice.

More specifically, the following weaknesses can be pointed out in the provisions of the current scheme.

Financing

- The scheme applies the contribution rate of 6% (paid by the workers) which was determined without proper actuarial evaluation. In fact, the scheme has been in a growing deficit, which has been covered by the government budget.

- Contributions are collected only from the basic salaries. However, there are various forms of additional allowances from which contributions and taxes are not collected.

- The benefits covered by the Social Security Fund and the Government are not clearly separated. Although the Fund was initially intended to finance only pension benefits, the Fund has been covering various benefits, such as the reimbursement of medical expenses, child allowances for pensioners, employment injury benefits, funeral benefits, disabled war veterans and invalidity pensions. Whereas, the costs of the child allowance for active civil servants and the lump-sum payments are met by the government budget.

Retirement and invalidity pensions

- In the light of the present contribution rate, the benefit appears to be at an unsustainable level in the following points:

(i) The pension formula provides high replacement rates, between 75% and 90% of the last basic salary (up to 100% in the case of persons who participated in the revolution before 1954).

(ii) In addition, a pensioner receives at retirement an additional lump-sum payment, which is equal to 15% of the last basic monthly salary for each year of service (this is met by the Government). Moreover, pension benefits are not taxable.[17]

(iii) The pensions in payment are fully indexed in line with the salary grade at the time of retirement, although the Government intends not to adjust pensions fully in line with salary increase.

- There is no provision to restrict the entitlement of two or more benefits for a person. A disabled pensioner can receive an old-age pension upon the attainment of retirement age (Statistics[18] show that about 15% of the retirement pensioners and 19% of the invalidity pensioners receive both pensions - about 1,250 persons).

- The normal retirement age is set at 55 for women and 60 for men. Considering the perspective of gender equality and the fact that the life expectancy of females is 3 years longer than that of males, it would be unjustifiable to provide the early retirement opportunity for female workers.

[17] Income tax is levied on the wages of each employee according to a sliding scale; 5% for income between 30 001 and 125 000 Kip a month, 10% for income between 125 001 and 250 000 a month, up 40% for income over 5 000 001; no income tax is payable for salaries below 30 000 Kip a month.

[18] Data have been drawn from the database of pensions paid by the Ministries, the Central Organizations and the Vientiane Municipality, which represents 20% of the old-age pensions and 10% of the invalidity pensions.

Employment injury and war invalidity

- There is no distinction between the work-related injury and the war invalidity. The majority of claims are made by war veterans.

- The pensions payable to the most seriously disabled persons who return to their (rural) villages reach the level of 150% of the last salary. In addition, an allowance is paid to the carer.

Survivors' benefit

- While orphans receive periodical allowances equal to the deceased parent's basic salary until the age of 18, there is no pension for widow(er)s. The benefit payable for widow(er)s is a lump-sum of up to 15 times the last basic monthly salary and the funeral benefit.

Medical care

- Although public servants and pensioners, as well as their spouses and children under 18 years of age, were formerly entitled to free medical treatment, the Regulation 2282 requires for the patient to pay the costs and claim reimbursement[19] from the Social Security Fund. However, this arrangement is not widely acknowledged nor fully implemented.

Sickness benefit

- Under the Decree 178/PM issued in 1993, a public servant who interrupts work due to sickness will receive his or her full salary for 30 days and thereafter 80% of salary for up to 12 months. In reality, however, salaries are paid in full even after 30 days and the amount is not claimed from the Social Security Fund.

4.2 Financial status of the current scheme

4.2.1 Income and expenditure of the Fund

Table 4-1 summarises the income and expenditure of the Social Security Fund from 1995 to 1997. On the revenue side, more than 60% of the income comes from the government budget; on the benefit expenditure side, the spending on the old-age pension is the largest, with 54.4% of the total benefit expenditure in fiscal year 1997, followed by the invalidity pension (including non-work related invalidity, employment injury and

[19] For instance, in case of medical examinations up to 5,000 Kip per visit with a maximum of three times per year; in case of hospitalisation, up to 40,000 Kip per case with a maximum of three times per year.

war invalidity), sharing 19.2% of the total expenditure. Short-term benefits account for 26.4%, with medical care accounting for 8.1% in 1997. The overall balance of the income and expenditure has a deficit of 495 million Kip in 1995 and 148 million Kip in 1996, resulting in the reduction of reserves of the scheme at 22 million Kip by the end of 1996. The balance has a small amount of surplus in 1997, making the reserves 48 million Kip by the end of 1997.

Table 4-1 shows also the PAYG (pay-as-you-go) cost rate, i.e. the expenditure of benefits in terms of the total insurable earnings. The overall PAYG cost rate was 17.4% in 1997, of which 12.81% for pensions, and 4.59% for short-term benefits. From this, it can be seen that even if the Government, as an employer, shared the same contribution rate as the workers (6%), there would be a deficit of more than 5% of the total insurable earnings.

Table 4-1: Operation of the social security fund, 1995-1997

Year	Amount (in million Kip)			as a % of total insurable earnings		
	1995	1996	1997	1995	1996	1997
Income (A)						
-Contributions (6%)	1,395	2,122	2,174			
-From national budget	2,890	3,250	3,752			
Total	**4,285**	**5,372**	**5,926**			
Expenditure (B)						
-Old age	2,903	3,054	3,211	12.49%	9.23%	9.47%
-Invalidity	830	1,016	1,133	3.57%	3.07%	3.34%
-Child allowances	311	363	415	1.34%	1.10%	1.23%
-Funeral-death grant	192	246	246	0.82%	0.74%	0.73%
-Funeral-lumpsum	234	301	301	1.01%	0.91%	0.89%
-Maternity	65	105	115	0.28%	0.32%	0.34%
-Medical care	245	435	479	1.05%	1.32%	1.41%
Total	**4,780**	**5,520**	**5,900**	**20.56%**	**16.68%**	**17.40%**
Surplus (A-B)	**-495**	**-148**	**26**			
Reserve (end of year)	**170**	**22**	**48**			

4.2.2 Insured workers and beneficiaries

Table 4-2 shows the number of active workers and beneficiaries from 1995 to 1997. Due to the privatization and the voluntary retrenchment program of the SOEs, the number of non-military civil servants decreased from 94,000 in December 1989 to 68,000 in 1996. In spite of further targeted efforts to reduce the number of civil servants, it has slightly increased to 69,000 in October 1997.

The number of old-age pensioners increased from 7,868 in 1995 to 8,216 in 1997. There was a sharp increase in the number of invalidity pensioners (from 5,239 in 1995 to 6,606 in 1997). This is mainly due to the implementation of the Decree 178/PM, which allowed for the claims of the war invalidity benefits. In 1997, child allowance was paid for 12,582 children. Furthermore, 830 funeral benefits (death grant and lump-sum payment) and 7,402 maternity benefits were paid.

Table 4-2: Number of active insured workers and beneficiaries, 1995-1997

Year	1995	1996	1997
Number of workers 1)	**69,115**	**68,108**	**69,031**
Number of benefits paid:			
-Old age	7,868	8,029	8,216
-Invalidity	5,239	5,923	6,606
-Child allowances	10,360	12,336	12,582
-Funeral benefits	645	829	830
-Maternity	4,147	6,729	7,402

1) The the number of workers in this table is slightly different from that in the "General Statistics on the Civil Service with 70,534 employees in 1995 (in the actuarial valuation, a number of 70,000 is used for the base year 1997.

4.2.3 Replacement rates

Table 4-3 indicates the average replacement rate, i.e. average pension amount as a percentage of the average last drawn basic salary. The average replacement rate is 86% for pensioners receiving only the old-age pension. This average replacement rate is 107% for pensioners receiving both old-age and invalidity pensions. From Table 4-3, it follows that the average retirement replacement rate can be reduced from 89% to 86% if invalidity pensions are terminated at retirement age. This will lead to a reduction of the expenditure by more than 3%.

Table 4-3: Average benefit levels of retirement and invalidity pension, 1997

	Single pension	Both pensions	Total
OLD AGE PENSIONS			
Average replacement rate	86%	107%	89%
INVALIDITY PENSIONS			
Average replacement rate	34%	107%	48%

It should be noted that many civil servants receive a position bonus in case of responsible job functions, or a technical bonus in education and health sectors. If these bonuses are taken into account, the replacement rates would be less than these levels.

4.2.4 Insurable earnings

The basic salary is classified by 6 categories, with respect to the education level of workers. Each category has 15 levels. A worker normally advances to the next salary level every two years. The basic salary table has not been adjusted since 1994. The minimum basic monthly salary is 36,400 Kip. The average basic monthly salary was 40,700 Kip in 1997.

In addition to the basic salaries, the following allowances and other compensations are paid. No income taxes or contributions are due on these allowances.

- A living allowance of 8,500 Kip as compensation for the price inflation since 1994;
- An allowance of 5,000 Kip if a worker has a non-working wife;

- A child allowance of 4,500 Kip per child if both parents are engaged in the civil service. If only one parent is a civil servant, the amount of 4,500 Kip is paid for the first child, and 2,250 Kip is paid from the second child;
- Position bonuses between 2,000 and 8,000 Kip for special responsible functions. It is estimated that 19,000 employees receive this bonus;
- Technical bonuses in education and health sectors (often 10% of basic salary). These bonuses are paid to about 47,000 employees.

Table 4-4 shows an estimate of basic salary and various allowances for the staff of the Ministry of Labour and Social Welfare (about 100 workers). It can be seen that (i) the average monthly basic salary is estimated 42,500 Kip, (ii) if the above allowances and bonuses are included, the salary increases by 41% to 59,900 Kip. (Technical bonuses are not paid to the employees of the Ministry of Labour and Social Welfare.)

Table 4-4: Estimated salaries of staff in Ministry of Labour, 1997

	Total wage bill (thousands of Kip)	Average per employee (in Kip)	Percentage of basic salary
Basic salary	**4,120**	**42,473**	**100.0%**
Allowances			
- living allowances	825	8,500	20.0%
- position bonuses	274	2,822	6.6%
- wife allowance	398	4,108	9.7%
- child allowance	194	2,004	4.7%
total allowances	**1,691**	**17,433**	**41.0%**
Total	**5,811**	**59,906**	**141.0%**

4.3 Restructuring the public sector scheme

As analysed in the previous section, the rationalisation for the current public sector scheme is imperative. In addition, the Social Security Steering Committee has adopted the principle that a unified scheme for the private and public sectors could be introduced at a later stage (e.g. by 2015). This point should be taken into account in formulating the reform options.

4.3.1 Options for reform

It should be noted that reforms of the existing pension schemes require long-term transition arrangements in order to avoid abrupt changes to the life plans for the retired workers and the workers near the retirement age. Therefore, cost containment measures can be implemented gradually by means of transition measures.

In the following, the reform options for the retirement and invalidity pensions are set out.

(i) The present contribution of 6% is not sufficient to cover the present benefit package. It should be increased to the level that enables the scheme to be self-financing. At the same time, the allowance and bonus should be included in the insurable earnings.

(ii) The pensionable age should be extended to 60 years for female workers. This may be achieved by a progressive extension by 6 months a year over a period of 10 years.

(iii) Payment of several benefits should be restricted. For new pensioners, the invalidity pension should be terminated once reaching the retirement age.

(iv) Pension protection for widow(er)s should be introduced.

With a view to introducing a unified scheme for workers in the private and public sectors in the future, the following points should be considered. Although the financial implications of these measures are not discussed in the present valuation, due attention should be paid to these points in the long-term policy formulation:

- One of the preconditions for the unification is that both schemes should have the common benefit and financing structure. In view of the high replacement rate of the public sector scheme, it is suggested to modify the pension formula of the public sector scheme into that of the private sector scheme.

- At the same time, the equal cost sharing between the two schemes should be achieved. The projection results indicate that there will be a significant difference in the future contribution rates of the both schemes. This difference reflects the past service liability and the expected growth in the number of contributors of each scheme. Taking these into account, appropriate steps should be taken towards the realisation of a common structure in financing.

- With a view to improving the efficiency of the schemes, standardization and harmonization should be reinforced in the area of administration. Particularly, due consideration should be given to the possible establishment of a common system for the collection of contributions, as well as to the development of a common information base.

4.3.2 Assumptions and policy scenarios

In the present actuarial valuation, the financial implications of two alternative policy scenarios are examined. Firstly, projections are made assuming that the scheme will continue to operate according to the current legislation (*status quo* scenario). Secondly, the projections take into account of the reform options formulated in the previous section.

The projections have been made under two assumptions on the future economic growth and employment. Under the base case assumption, the number of civil servants will remain at the current level of about 70,000 until 2005, and grow at the rate of 2% per annum from 2005 and after. Under the high growth assumption, the number of civil servants will grow at about 3.5% per annum from the year 2000 and after, in order to meet the demands of the favourable economic growth.

In addition, the following additional assumptions have been made:

- Due to the insufficient data on war veterans and workers in hazardous conditions, the percentage of claims for early retirement pensions is assumed to equal 50%. As war veterans who participated in the war in 1954-1975 will reach the retirement age of 55 before 2015, the number of these claims is expected to decrease. Therefore, the percentage of claims for early retirement for those who worked under hazardous conditions is expected to decrease gradually from 50% to 15% in 2015 and remain this level.

- The promulgation of the Decree 178/PM has led to a temporary increase in the number of new claims for invalidity pensions. No figures are available in terms of the number of war invalids who claim an invalidity pension. For the purposes of projections, it has been assumed that as from 2000, no new war invalidity claimants will be paid from the Fund; and that current invalidity pensioners will continue to receive benefits from the Fund.

- It is estimated that about 1,250 persons receive both the retirement and invalidity pensions. Of them, 900 have already reached the normal retirement age (60 for males and 55 for females), while 350 are below that age. In order to avoid the double counting of these pensioners, the first group is regarded as old age pensioners and the second group as invalidity pensioners. As a consequence, this leads to 7,900 old age pensioners and 5,700 invalidity pensioners in 1997 (the initial year of the valuation).

4.4 Results of the actuarial projections

4.4.1 *Status quo* projections

Table 4-5 shows the results of demographic and financial projections under the base case assumption. For the period 1997-2020, due to the growth of the number of civil servants, the PAYG cost rate of pension benefits is expected to stay at 13%-15%. This is due to (i) the number of workers aged 50 or older has been reduced as a result of the retrenchment program of the past years; therefore, a relatively small number of new retirement pensioners in the coming years; and, (ii) most of war veterans who are supposed to claim early retirement will reach their retirement age (at the age of 55 for men and 50 for women) by 2015, which will gradually lead to an increase of the average retirement age, and thus reduce the new awards of retirement pensions; (iii) as a consequence of the expected decrease in the number of war invalidity claims, the cost of invalidity pensions would decline from 3.3% in 1997 to 3.1% in 2020. For the period after 2020, due to the ageing of the population, it is estimated that the PAYG cost rate will increase to about 24.8% by 2050.

Table 4-6 shows the results of demographic and financial projections under the high growth assumption. Under this assumption, the number of civil servants is expected to be more than the base case assumption, although these results would largely depend on future progress in the civil service reform. The total PAYG cost rate would increase to 13.2% in 2020, which is 1.3%-points lower than the result of the base case assumption. After 2020, the PAYG cost rate is estimated to increase to 16.3% by 2050, which is 8.5%-points lower than the result of the base case assumption.

4.4.2 Financial implications of reform options

The actuarial projections have been conducted by taking into account of the pension reforms. These measures are assumed to be introduced in the year 2000.

As shown in Table 4-7, under the base case assumption, it is estimated that the total PAYG cost rate would maintain its 1997 level until 2020 (1.8%-points lower than the status quo case), and that it would gradually increase to 20.6% by 2050 (4.2%-points lower than the status quo case). Whereas, the results under the high growth assumption shown in Table 4-8 indicate that the PAYG cost rate would decrease to 11.0% in 2020, then it would increase to 13.5% in 2050.

Table 4-5: Estimated expenditure of the public sector scheme, 1997-2050 (status quo scenario; base case assumption)

Year	1997	1998	1999	2000	2005	2010	2015	2020	2030	2040	2050
DEMOGRAPHIC PROJECTION											
No. of workers	70,000	70,000	70,000	70,000	71,400	78,800	87,000	96,100	117,100	142,800	174,100
Number of beneficiaries											
- Old age	7,900	8,000	8,200	8,300	9,000	9,700	10,700	12,800	21,800	34,800	47,400
- awarded before 1998	7,900	7,500	7,200	6,900	5,300	3,800	2,500	1,500	300	0	0
- awarded in and after 1998	0	500	1,000	1,400	3,700	5,900	8,200	11,300	21,500	34,800	47,400
- Invalidity	5,700	6,200	6,600	6,800	7,200	7,400	7,500	7,400	7,200	7,000	6,900
- awarded before 1998	5,700	5,600	5,500	5,400	4,900	4,200	3,400	2,600	1,000	200	0
- awarded in and after 1998	0	600	1,100	1,400	2,400	3,200	4,100	4,900	6,200	6,900	6,900
Total	13,600	14,200	14,800	15,100	16,200	17,100	18,200	20,200	29,000	41,800	54,300
Demographic ratio											
- Old age	11.3%	11.4%	11.7%	11.9%	12.6%	12.3%	12.3%	13.3%	18.6%	24.4%	27.2%
- awarded before 1998	11.3%	10.7%	10.3%	9.9%	7.4%	4.8%	2.9%	1.6%	0.3%	0.0%	0.0%
- awarded in and after 1998	0.0%	0.7%	1.4%	2.0%	5.2%	7.5%	9.4%	11.8%	18.4%	24.4%	27.2%
- Invalidity	8.1%	8.9%	9.4%	9.7%	10.1%	9.4%	8.6%	7.7%	6.1%	4.9%	4.0%
- awarded before 1998	8.1%	8.0%	7.9%	7.7%	6.9%	5.3%	3.9%	2.7%	0.9%	0.1%	0.0%
- awarded in and after 1998	0.0%	0.9%	1.6%	2.0%	3.4%	4.1%	4.7%	5.1%	5.3%	4.8%	4.0%
Total	19.4%	20.3%	21.1%	21.6%	22.7%	21.7%	20.9%	21.0%	24.8%	29.3%	31.2%
FINANCIAL PROJECTION (in million Kip)											
Total salaries	33,901	33,915	44,106	48,532	69,564	98,841	140,374	198,649	394,819	782,476	1,555,866
Total expenditure											
- Old age	3,211	3,299	4,328	4,829	7,347	10,209	14,529	22,496	63,156	163,249	360,084
- awarded before 1998	3,211	3,076	3,823	4,011	4,280	3,874	3,212	2,385	857	129	1
- awarded in and after 1998	0	223	505	818	3,067	6,335	11,317	20,110	62,298	163,120	360,083
- Invalidity	1,133	1,236	1,703	1,941	2,888	3,788	4,883	6,217	9,887	15,797	25,090
- awarded before 1998	1,133	1,114	1,423	1,537	1,924	2,103	2,168	2,059	1,284	365	20
- awarded in and after 1998	0	121	279	404	964	1,685	2,716	4,158	8,603	15,432	25,070
Total	4,343	4,534	6,030	6,770	10,235	13,997	19,413	28,713	73,043	179,047	385,174
PAYG-CONTRIBUTION RATES (percentage of salaries)											
- Old age	9.5%	9.7%	9.8%	10.0%	10.6%	10.3%	10.4%	11.3%	16.0%	20.9%	23.1%
- awarded before 1998	9.5%	9.1%	8.7%	8.3%	6.2%	3.9%	2.3%	1.2%	0.2%	0.0%	0.0%
- awarded in and after 1998	0.0%	0.7%	1.1%	1.7%	4.4%	6.4%	8.1%	10.1%	15.8%	20.8%	23.1%
- Invalidity	3.3%	3.6%	3.9%	4.0%	4.2%	3.8%	3.5%	3.1%	2.5%	2.0%	1.6%
- awarded before 1998	3.3%	3.3%	3.2%	3.2%	2.8%	2.1%	1.5%	1.0%	0.3%	0.0%	0.0%
- awarded in and after 1998	0.0%	0.4%	0.6%	0.8%	1.4%	1.7%	1.9%	2.1%	2.2%	2.0%	1.6%
Total	12.8%	13.4%	13.7%	13.9%	14.7%	14.2%	13.8%	14.5%	18.5%	22.9%	24.8%

Table 4-6: Estimated expenditure of the public sector scheme, 1997-2050 (status quo scenario; high growth assumption)

Year	1997	1998	1999	2000	2005	2010	2015	2020	2030	2040	2050
DEMOGRAPHIC PROJECTION											
No. of workers	**70,000**	**71,600**	**73,800**	**76,000**	**88,100**	**105,600**	**128,300**	**155,400**	**223,200**	**311,000**	**422,000**
Number of beneficiaries											
- Old age	**7,900**	**8,000**	**8,200**	**8,300**	**9,300**	**11,200**	**14,200**	**19,600**	**34,300**	**49,500**	**75,100**
- awarded before 1998	7,900	7,500	7,200	6,900	5,300	3,800	2,500	1,500	300	0	0
- awarded in and after 1998	0	500	1,000	1,400	4,000	7,400	11,700	18,100	34,000	49,500	75,100
- Invalidity	**5,700**	**6,200**	**6,600**	**6,900**	**7,500**	**8,000**	**8,500**	**9,000**	**9,600**	**10,500**	**11,800**
- awarded before 1998	5,700	5,600	5,500	5,400	4,900	4,200	3,400	2,600	1,000	200	0
- awarded in and after 1998	0	600	1,100	1,400	2,600	3,800	5,100	6,400	8,600	10,300	11,800
Total	**13,600**	**14,200**	**14,800**	**15,200**	**16,800**	**19,200**	**22,700**	**28,600**	**43,900**	**60,000**	**86,900**
Demographic ratio											
- Old age	**11.3%**	**11.2%**	**11.1%**	**10.9%**	**10.6%**	**10.6%**	**11.1%**	**12.6%**	**15.4%**	**15.9%**	**17.8%**
- awarded before 1998	11.3%	10.5%	9.8%	9.1%	6.0%	3.6%	1.9%	1.0%	0.1%	0.0%	0.0%
- awarded in and after 1998	0.0%	0.7%	1.4%	1.8%	4.5%	7.0%	9.1%	11.6%	15.2%	15.9%	17.8%
- Invalidity	**8.1%**	**8.7%**	**8.9%**	**9.1%**	**8.5%**	**7.6%**	**6.6%**	**5.8%**	**4.3%**	**3.4%**	**2.8%**
- awarded before 1998	8.1%	7.8%	7.5%	7.1%	5.6%	4.0%	2.7%	1.7%	0.4%	0.1%	0.0%
- awarded in and after 1998	0.0%	0.8%	1.5%	1.8%	3.0%	3.6%	4.0%	4.1%	3.9%	3.3%	2.8%
Total	**19.4%**	**19.8%**	**20.1%**	**20.0%**	**19.1%**	**18.2%**	**17.7%**	**18.4%**	**19.7%**	**19.3%**	**20.6%**
FINANCIAL PROJECTION (in million Kip)											
Total salaries	**33,901**	**34,754**	**46,617**	**53,898**	**96,479**	**161,138**	**272,086**	**458,046**	**1,283,944**	**3,476,393**	**8,935,860**
Total expenditure											
- Old age	**3,211**	**3,299**	**4,330**	**4,930**	**8,522**	**14,328**	**25,569**	**49,668**	**169,801**	**472,072**	**1,353,412**
- awarded before 1998	3,211	3,076	3,823	4,086	4,767	4,705	4,255	3,454	1,487	265	3
- awarded in and after 1998	0	223	507	843	3,755	9,624	21,314	46,214	168,314	471,807	1,353,408
- Invalidity	**1,133**	**1,236**	**1,707**	**1,988**	**3,333**	**4,994**	**7,412**	**10,884**	**22,699**	**47,972**	**102,836**
- awarded before 1998	1,133	1,114	1,423	1,565	2,143	2,554	2,872	2,981	2,226	750	47
- awarded in and after 1998	0	121	283	423	1,189	2,440	4,540	7,903	20,473	47,222	102,790
Total	**4,343**	**4,534**	**6,036**	**6,918**	**11,855**	**19,323**	**32,981**	**60,552**	**192,500**	**520,044**	**1,456,248**
PAYG-CONTRIBUTION RATES (percentage of salaries)											
- Old age	**9.5%**	**9.5%**	**9.3%**	**9.1%**	**8.8%**	**8.9%**	**9.4%**	**10.8%**	**13.2%**	**13.6%**	**15.1%**
- awarded before 1998	9.5%	8.9%	8.2%	7.6%	4.9%	2.9%	1.6%	0.8%	0.1%	0.0%	0.0%
- awarded in and after 1998	0.0%	0.6%	1.1%	1.6%	3.9%	6.0%	7.8%	10.1%	13.1%	13.6%	15.1%
- Invalidity	**3.3%**	**3.6%**	**3.7%**	**3.7%**	**3.5%**	**3.1%**	**2.7%**	**2.4%**	**1.8%**	**1.4%**	**1.2%**
- awarded before 1998	3.3%	3.2%	3.1%	2.9%	2.2%	1.6%	1.1%	0.7%	0.2%	0.0%	0.0%
- awarded in and after 1998	0.0%	0.3%	0.6%	0.8%	1.2%	1.5%	1.7%	1.7%	1.6%	1.4%	1.2%
Total	**12.8%**	**13.0%**	**12.9%**	**12.8%**	**12.3%**	**12.0%**	**12.1%**	**13.2%**	**15.0%**	**15.0%**	**16.3%**

Table 4-7: Estimated expenditure of the public sector scheme, 1997-2050 (reform scenario; base case assumption)

Year	1997	1998	1999	2000	2005	2010	2015	2020	2030	2040	2050
DEMOGRAPHIC PROJECTION											
No. of workers	**70,000**	**70,000**	**70,000**	**70,000**	**71,400**	**78,800**	**87,000**	**96,100**	**117,100**	**142,800**	**174,100**
Number of beneficiaries											
- Old age	**7,900**	**8,000**	**8,200**	**8,300**	**8,500**	**8,800**	**9,300**	**10,800**	**17,300**	**27,900**	**38,800**
- awarded before 1998	7,900	7,500	7,200	6,900	5,300	3,800	2,500	1,500	300	0	0
- awarded in and after 1998	0	500	1,000	1,400	3,200	5,000	6,800	9,300	16,900	27,900	38,800
- Invalidity	**5,700**	**6,200**	**6,600**	**6,800**	**7,200**	**7,500**	**7,600**	**7,500**	**7,300**	**7,300**	**7,200**
- awarded before 1998	5,700	5,600	5,500	5,400	4,900	4,200	3,400	2,600	1,000	200	0
- awarded in and after 1998	0	600	1,100	1,400	2,400	3,300	4,100	4,900	6,300	7,100	7,200
Total	**13,600**	**14,200**	**14,800**	**15,100**	**15,700**	**16,300**	**16,900**	**18,300**	**24,600**	**35,200**	**46,000**
Demographic ratio											
- Old age	**11.3%**	**11.4%**	**11.7%**	**11.9%**	**11.9%**	**11.2%**	**10.7%**	**11.2%**	**14.8%**	**19.5%**	**22.3%**
- awarded before 1998	11.3%	10.7%	10.3%	9.9%	7.4%	4.8%	2.9%	1.6%	0.3%	0.0%	0.0%
- awarded in and after 1998	0.0%	0.7%	1.4%	2.0%	4.5%	6.3%	7.8%	9.7%	14.4%	19.5%	22.3%
- Invalidity	**8.1%**	**8.9%**	**9.4%**	**9.7%**	**10.1%**	**9.5%**	**8.7%**	**7.8%**	**6.2%**	**5.1%**	**4.1%**
- awarded before 1998	8.1%	8.0%	7.9%	7.7%	6.9%	5.3%	3.9%	2.7%	0.9%	0.1%	0.0%
- awarded in and after 1998	0.0%	0.9%	1.6%	2.0%	3.4%	4.2%	4.7%	5.1%	5.4%	5.0%	4.1%
Total	**19.4%**	**20.3%**	**21.1%**	**21.6%**	**22.0%**	**20.7%**	**19.4%**	**19.0%**	**21.0%**	**24.6%**	**26.4%**
FINANCIAL PROJECTION (in million Kip)											
Total salaries	**33,901**	**33,915**	**44,106**	**49,440**	**77,497**	**120,061**	**185,979**	**287,696**	**685,989**	**1,613,418**	**3,721,236**
Total expenditure											
- Old age	**3,211**	**3,299**	**4,328**	**4,910**	**7,665**	**11,101**	**16,723**	**27,324**	**86,284**	**269,125**	**702,515**
- awarded before 1998	3,211	3,076	3,823	4,086	4,767	4,705	4,255	3,454	1,487	265	3
- awarded in and after 1998	0	223	505	823	2,897	6,396	12,468	23,870	84,798	268,860	702,512
- Invalidity	**1,133**	**1,236**	**1,704**	**1,978**	**3,226**	**4,637**	**6,546**	**9,128**	**17,561**	**33,832**	**63,636**
- awarded before 1998	1,133	1,114	1,423	1,565	2,143	2,554	2,872	2,981	2,226	750	47
- awarded in and after 1998	0	122	280	413	1,082	2,083	3,674	6,147	15,335	33,082	63,589
Total	**4,343**	**4,535**	**6,031**	**6,898**	**10,964**	**15,920**	**23,639**	**37,175**	**106,453**	**311,256**	**787,862**
PAYG-CONTRIBUTION RATES (percentage of salaries)											
- Old age	**9.5%**	**9.7%**	**9.8%**	**9.9%**	**9.9%**	**9.2%**	**9.0%**	**9.5%**	**12.6%**	**16.7%**	**18.9%**
- awarded before 1998	9.5%	9.1%	8.7%	8.3%	6.2%	3.9%	2.3%	1.2%	0.2%	0.0%	0.0%
- awarded in and after 1998	0.0%	0.7%	1.1%	1.7%	3.7%	5.3%	6.7%	8.3%	12.4%	16.7%	18.9%
- Invalidity	**3.3%**	**3.6%**	**3.9%**	**4.0%**	**4.2%**	**3.9%**	**3.5%**	**3.2%**	**2.6%**	**2.1%**	**1.7%**
- awarded before 1998	3.3%	3.3%	3.2%	3.2%	2.8%	2.1%	1.5%	1.0%	0.3%	0.0%	0.0%
- awarded in and after 1998	0.0%	0.4%	0.6%	0.8%	1.4%	1.7%	2.0%	2.1%	2.2%	2.1%	1.7%
Total	**12.8%**	**13.4%**	**13.7%**	**13.9%**	**14.1%**	**13.1%**	**12.5%**	**12.7%**	**15.1%**	**18.8%**	**20.6%**

Table 4-8: Estimated expenditure of the public sector scheme, 1997-2050 (reform scenario; high growth assumption)

Year	1997	1998	1999	2000	2005	2010	2015	2020	2030	2040	2050
DEMOGRAPHIC PROJECTION											
No. of workers	**70,000**	**71,600**	**73,800**	**76,000**	**88,100**	**105,600**	**128,300**	**155,400**	**223,200**	**311,000**	**422,000**
Number of beneficiaries											
- Old age	**7,900**	**8,000**	**8,200**	**8,300**	**8,600**	**9,500**	**11,400**	**15,500**	**27,900**	**41,400**	**60,900**
- awarded before 1998	7,900	7,500	7,200	6,900	5,300	3,800	2,500	1,500	300	0	0
- awarded in and after 199	0	500	1,000	1,400	3,400	5,700	8,900	14,000	27,600	41,400	60,900
- Invalidity	**5,700**	**6,200**	**6,600**	**6,900**	**7,500**	**8,100**	**8,700**	**9,200**	**10,000**	**11,000**	**12,400**
- awarded before 1998	5,700	5,600	5,500	5,400	4,900	4,200	3,400	2,600	1,000	200	0
- awarded in and after 199	0	600	1,100	1,400	2,600	3,900	5,300	6,600	9,000	10,800	12,400
Total	**13,600**	**14,200**	**14,800**	**15,200**	**16,100**	**17,600**	**20,100**	**24,700**	**37,900**	**52,400**	**73,300**
Demographic ratio											
- Old age	**11.3%**	**11.2%**	**11.1%**	**10.9%**	**9.8%**	**9.0%**	**8.9%**	**10.0%**	**12.5%**	**13.3%**	**14.4%**
- awarded before 1998	11.3%	10.5%	9.8%	9.1%	6.0%	3.6%	1.9%	1.0%	0.1%	0.0%	0.0%
- awarded in and after 199	0.0%	0.7%	1.4%	1.8%	3.9%	5.4%	6.9%	9.0%	12.4%	13.3%	14.4%
- Invalidity	**8.1%**	**8.7%**	**8.9%**	**9.1%**	**8.5%**	**7.7%**	**6.8%**	**5.9%**	**4.5%**	**3.5%**	**2.9%**
- awarded before 1998	8.1%	7.8%	7.5%	7.1%	5.6%	4.0%	2.7%	1.7%	0.4%	0.1%	0.0%
- awarded in and after 199	0.0%	0.8%	1.5%	1.8%	3.0%	3.7%	4.1%	4.2%	4.0%	3.5%	2.9%
Total	**19.4%**	**19.8%**	**20.1%**	**20.0%**	**18.3%**	**16.7%**	**15.7%**	**15.9%**	**17.0%**	**16.8%**	**17.4%**
FINANCIAL PROJECTION (in million Kip)											
Total salaries	**33,901**	**34,754**	**46,617**	**53,898**	**96,627**	**161,708**	**273,004**	**459,618**	**1,287,523**	**3,482,642**	**8,966,321**
Total expenditure											
- Old age	**3,211**	**3,299**	**4,330**	**4,919**	**7,808**	**12,070**	**20,487**	**39,242**	**138,312**	**394,484**	**1,097,999**
- awarded before 1998	3,211	3,076	3,823	4,086	4,767	4,705	4,255	3,454	1,487	265	3
- awarded in and after 199	0	223	507	833	3,041	7,366	16,232	35,788	136,826	394,219	1,097,996
- Invalidity	**1,133**	**1,236**	**1,707**	**1,990**	**3,344**	**5,056**	**7,581**	**11,252**	**24,026**	**51,126**	**109,447**
- awarded before 1998	1,133	1,114	1,423	1,565	2,143	2,554	2,872	2,981	2,226	750	47
- awarded in and after 199	0	122	284	424	1,201	2,502	4,710	8,271	21,800	50,376	109,401
Total	**4,343**	**4,535**	**6,037**	**6,919**	**11,231**	**17,338**	**28,555**	**51,585**	**166,554**	**457,787**	**1,241,389**
PAYG-CONTRIBUTION RATES (percentage of salaries)											
- Old age	**9.5%**	**9.5%**	**9.3%**	**9.1%**	**8.1%**	**7.5%**	**7.5%**	**8.5%**	**10.7%**	**11.3%**	**12.2%**
- awarded before 1998	9.5%	8.9%	8.2%	7.6%	4.9%	2.9%	1.6%	0.8%	0.1%	0.0%	0.0%
- awarded in and after 199	0.0%	0.6%	1.1%	1.5%	3.1%	4.6%	5.9%	7.8%	10.6%	11.3%	12.2%
- Invalidity	**3.3%**	**3.6%**	**3.7%**	**3.7%**	**3.5%**	**3.1%**	**2.8%**	**2.4%**	**1.9%**	**1.5%**	**1.2%**
- awarded before 1998	3.3%	3.2%	3.1%	2.9%	2.2%	1.6%	1.1%	0.6%	0.2%	0.0%	0.0%
- awarded in and after 199	0.0%	0.4%	0.6%	0.8%	1.2%	1.5%	1.7%	1.8%	1.7%	1.4%	1.2%
Total	**12.8%**	**13.0%**	**13.0%**	**12.8%**	**11.5%**	**10.6%**	**10.3%**	**11.0%**	**12.6%**	**12.8%**	**13.5%**

Table 4-9 and Figure 4-1 illustrate the financial impact of each reform measure in terms of the PAYG cost rates.

- The extension of the retirement age leads to the savings of old-age pensions by 1.5% in 2020 and 3.7% in 2050. However, since this will result in a slight increase of the invalidly pensions, the total effect will be 3.6% in 2050.

- The restriction of the entitlement of two or more pensions will lead to a small cost reduction 0.2% in 2020 and 0.6% in 2050. (It has been assumed that this measure applies only for new pensioners.)

- The introduction of widow(er)s' pensions would require an estimated additional cost of 2.0%-2.7% of the insurable earnings.

Compared with the results in the base case assumption, the high growth assumption leads to smaller impacts. This is due to the fact that the demographic dependency ratio is relatively low under the high growth assumption.

The extension of the insurable base to allowances or bonuses will result in an immediate increase of the contribution income. In the long-term, however, the expenditure will increase accordingly if the increase in the insurable salary is reflected to the pension calculation. Concerning this issue, it may be worthwhile to note that a proposal by the World Bank suggests that extra salary adjustments (compensations for cost of living increase) be paid to the active civil servants but not to the retired workers.

4.5 Estimation of the past service liabilities of the workers in the former state owned enterprises

4.5.1 General

Since 1988 the State Owned Enterprises (SOEs) have undergone major reforms. The first stage of the reform process was to dissolve small and unprofitable SOEs, while making the remaining SOEs more competitive. Employees of the dissolved enterprises either returned as civil servants or moved to the private sector. In the early 1990s the Government embarked on a wide- ranging privatisation program for the remaining enterprises. As a result, the number of SOEs decreased from 600 in 1988 to 90 in 1995, of which 58 are targeted for further privatisation.

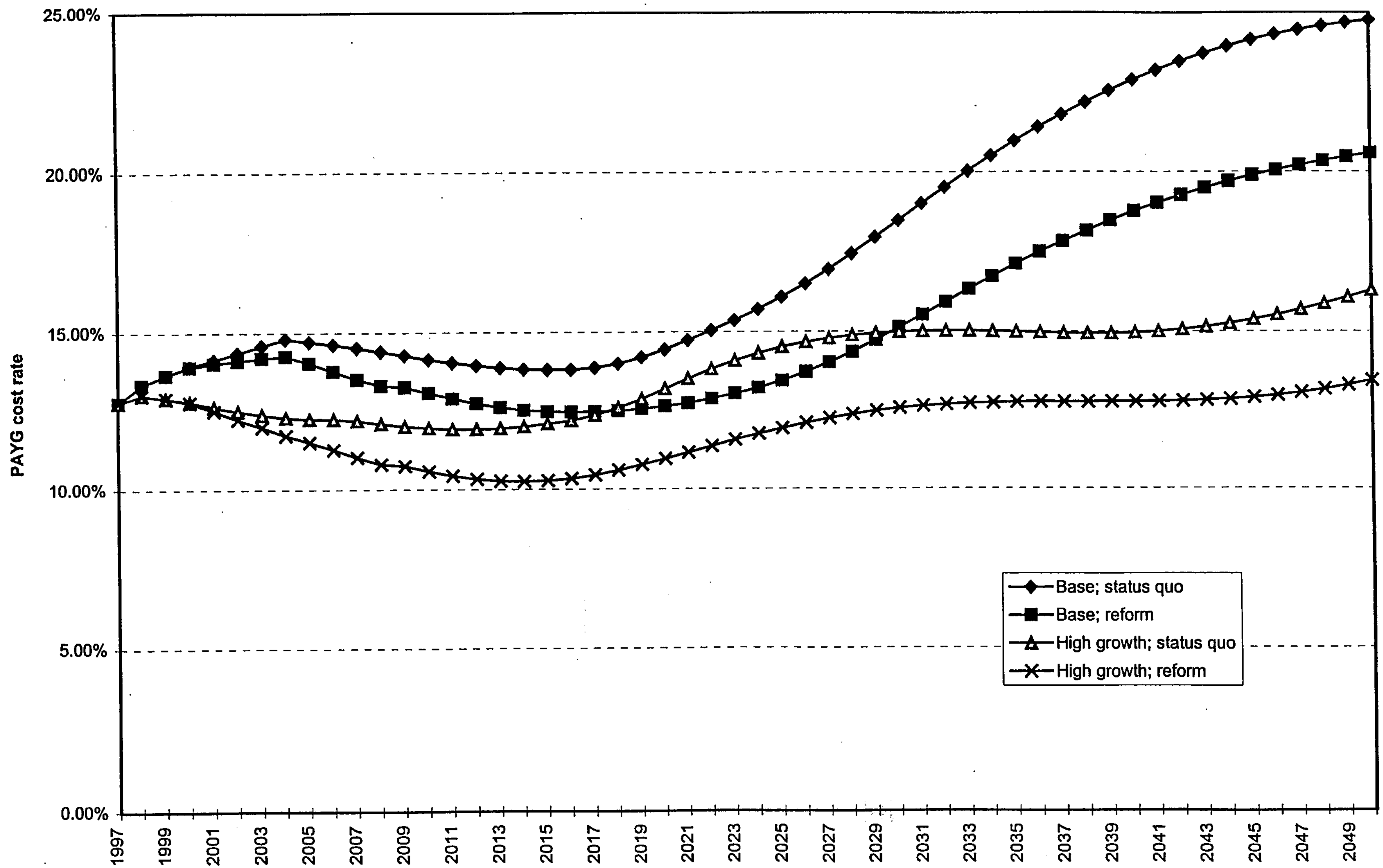
Up to the stage of the present valuation, no decision has been taken as to whether or not employees of SOEs should be covered continuously by the public sector scheme, although according to the Decree 178, Regulation 2282, views of the Ministry of Finance, and the Department of Public Administration, it has been suggested that these employees be excluded from the public sector scheme.

Table 4-9 : Financial impact of reform measures, 1997-2050

(as a % of total insurable earnings)

Year	1997	1998	1999	2000	2005	2010	2015	2020	2030	2040	2050
Base case assumption											
(A) PAYG cost rates (status quo)	**12.8%**	**13.4%**	**13.7%**	**13.9%**	**14.7%**	**14.2%**	**13.8%**	**14.5%**	**18.5%**	**22.9%**	**24.8%**
Effects of:											
- increasing retirement age	0.0%	0.0%	0.0%	0.0%	-0.6%	-0.9%	-1.1%	-1.5%	-3.0%	-3.6%	-3.6%
- restriction to one pension	0.0%	0.0%	0.0%	0.0%	-0.1%	-0.1%	-0.2%	-0.2%	-0.4%	-0.5%	-0.6%
- introduction of widow(er)s pension	0.0%	0.0%	0.0%	0.2%	0.9%	1.4%	1.8%	2.0%	2.1%	2.3%	2.7%
(B) Total impact of the reform measures	**0.0%**	**0.0%**	**0.0%**	**0.1%**	**0.2%**	**0.4%**	**0.4%**	**0.2%**	**-1.2%**	**-1.8%**	**-1.5%**
(C) PAYG cost rates (reform)	**12.8%**	**13.4%**	**13.7%**	**14.1%**	**14.9%**	**14.5%**	**14.3%**	**14.6%**	**17.3%**	**21.1%**	**23.3%**
High growth assumption											
(A) PAYG cost rates (status quo)	**12.8%**	**13.0%**	**12.9%**	**12.8%**	**12.3%**	**12.0%**	**12.1%**	**13.2%**	**15.0%**	**15.0%**	**16.3%**
Effects of:											
- increasing retirement age	0.0%	0.0%	0.0%	0.0%	-0.7%	-1.3%	-1.7%	-2.0%	-2.1%	-1.8%	-2.5%
- restriction to one pension	0.0%	0.0%	0.0%	0.0%	-0.1%	-0.1%	-0.2%	-0.2%	-0.3%	-0.3%	-0.4%
- introduction of widow(er)s pension	0.0%	0.0%	0.0%	0.2%	0.7%	1.1%	1.3%	1.4%	1.5%	1.6%	1.6%
(B) Total impact of the reform measures	**0.0%**	**0.0%**	**0.0%**	**0.1%**	**0.0%**	**-0.3%**	**-0.6%**	**-0.8%**	**-0.9%**	**-0.5%**	**-1.3%**
(C) PAYG cost rates (reform)	**12.8%**	**13.0%**	**13.0%**	**13.0%**	**12.3%**	**11.7%**	**11.6%**	**12.4%**	**14.1%**	**14.4%**	**15.0%**

Figure 4-1: Effect of reforms under the base case and high growth assumptions; 1997-2050



Under any circumstances, the accrued pension rights should be preserved. The purpose of this section is to evaluate the present value of the accrued liabilities for the workers of the former SOEs, i.e. the discounted value of the future pension payments corresponding to the past services.

4.5.2 Results of the valuation

For the purposes of the valuation, the following assumptions have been made:

- The average age of entering the pension scheme is 20 years, for both men and women;
- The accrued benefit rate of pension is 1/40 per year of service between the age of 20 and 60;
- The reference salary for the pension calculation is the last earned basic salary of the civil servant, according to the current salary scale of civil servants.
- The employees left the service between 1993 and 1994;
- The results of the 1995 Census have been used for estimating the number of employees (about 27,000 workers, of which 19,000 in SOEs and 8,000 in joint-venture enterprises). This might involve certain underestimation as fully privatised enterprises are not included.
- In the present valuation, the estimate has been made by using a real interest rate (i.e. nominal interest rate less index factor) of 2% per annum.

Table 4-10 shows the results of the valuation by age group. The total present value of the accrued liability is estimated to be 28 billion Kip, which is 4.7 times the annual expenditures of the Social Security Fund. The average amount per employee is about one million Kip, which is about 2 times the average annual basic salary.

It should be noted that these assumptions include a considerable degree of uncertainties due to the inaccurate statistics. In addition, the present value largely relies on the assumed interest rate. Therefore, the valuation results are to be regarded as a rough estimate.

Table 4-10 : Estimation of past service liability of employees of former state-owned enterprises

Age group	State owned enterprises		Joint-venture enterprises		Total
	males	females	males	females	
Number of employees					
24 and less	2,401	1,532	1,429	1,280	6,642
25-29	2,750	937	1,009	463	5,159
30-34	2,931	782	886	270	4,869
35-39	2,585	494	851	183	4,113
40-44	1,573	217	525	108	2,423
45-49	1,263	128	387	42	1,820
50-54	696	41	245	22	1,004
55-59	405	14	155	12	586
60 and over	244	12	81	2	339
Total	**14,848**	**4,157**	**5,568**	**2,382**	**26,955**
Total amount of accrued liability (in million Kip)					
24 and less	102	77	26	22	227
25-29	831	413	244	158	1,647
30-34	1,879	734	515	230	3,357
35-39	2,824	790	873	277	4,764
40-44	2,704	541	851	256	4,352
45-49	3,065	443	901	143	4,553
50-54	2,351	192	803	100	3,445
55-59	1,905	91	716	75	2,787
60 and over	1,841	110	591	17	2,559
Total	**17,502**	**3,392**	**5,519**	**1,279**	**27,692**
Average amount of accrued liability per worker (Kip)					
24 and less	42,000	50,000	19,000	17,000	34,000
25-29	302,000	441,000	242,000	342,000	319,000
30-34	641,000	939,000	581,000	851,000	690,000
35-39	1,092,000	1,599,000	1,026,000	1,512,000	1,158,000
40-44	1,719,000	2,494,000	1,620,000	2,373,000	1,796,000
45-49	2,427,000	3,463,000	2,329,000	3,414,000	2,502,000
50-54	3,378,000	4,671,000	3,278,000	4,545,000	3,432,000
55-59	4,704,000	6,528,000	4,618,000	6,242,000	4,756,000
60 and over	7,547,000	9,157,000	7,291,000	8,378,000	7,548,000
Average	**1,179,000**	**816,000**	**991,000**	**537,000**	**1,027,000**

4.6 Conclusion

The actuarial analysis of the public sector scheme has lead to the following observations:

- The current scheme for the civil servants reveals the legacy of a centrally planned economy with a tendency to provide secure employment to civil servants with low wages. The social protection provisions display inconsistency with the government's economic policies and public sector reform programmes.

- The scheme has been in deficit and heavily relying on the subsidies from the government budget. This is ascribed to the imbalance of contribution income (inadequate contribution rate and limited contribution base) and benefit expenditure (various generous provisions).

- The PAYG cost rate for the pension benefits stood at 12.8% in 1997. The status quo projections under the base case assumption indicate that this rate could stay below 14.5% until 2020. After 2020, due to the ageing of the population, it is estimated that the PAYG cost rate will increase to about 24.8 in 2050. Under the high growth assumption, with a higher growth of the civil servants, the PAYG rate of the pensions would increase to 13.2% in 2020 and to 16.3% in 2050.

- The financial implication of the main proposals to restore the financial equilibrium has been examined:

  (i) The reform projections under the base case assumption indicate that the PAYG cost rate is estimated to be 12.7% in 2020, and 20.6% in 2050. Under the high growth assumption, the PAYG rate would be 11.0% in 2020 and 13.5% in 2050.

  (ii) The extension of the retirement age leads to the savings of the PAYG cost rate of old-age pensions by 1.5%-points in 2020 and 3.7%-points 2050. There will be a slight increase in the invalidity pensions.

  (iii) The reduction of the entitlement of two or more pensions for new pensioners will result in a reduction in the PAYG cost rate by 0.2%-points in 2020 and 0.6%-points in 2050.

  (iv) The introduction of widow(er)s' pensions would require an estimated additional cost of 2.0%-2.7%-points of the insurable earnings in the long-term.

- In addition, the accrued liability of the past services for the workers of the former state-owned enterprises has been evaluated. The total present value of the accrued liability is estimated to be 28 billion Kip, which is 4.7 times the annual expenditure of the Social Security Fund. The average amount per worker is about 1 million Kip, which is almost equivalent to 2 times the average annual basic salary.

Annex A: Description of the proposed private sector scheme[1]

1. Coverage

Compulsory coverage

All workers, employed under the Labour Law of the Lao PDR in State Owned Enterprises, joint-venture enterprises or the private sector enterprises, are insured by the social security system. The following are excluded from the scheme: civil servants, the military and armed forces; personnel of international organisations and foreign personnel of multinational corporations in Lao PDR working for not more than 6 months; Lao employees working abroad for a foreign employer; students and trainees who are not remunerated.

Future extension of coverage

Initially, compulsory participation in the social security scheme will apply only to enterprises with 10 or more employees, although smaller enterprises will be covered if they are a part of a larger enterprise. Compulsory coverage will be extended to enterprises with 5 or more employees within five years of the implementation of the scheme, and to all employees, within ten years.

Voluntary coverage

Smaller employers who will not be covered compulsorily in the initial stages, may voluntarily join the social insurance scheme.

2. Organization

The Social Security Organization (SSO) shall be established as an autonomous administrative body under the supervision of the Minister of Labour and Social Welfare. A Board of Directors, composed of 11 members from tripartite parties, governs the SSO. The Board is responsible for the financial management of the social security system and can decide to change the level of benefits and contributions.

[1] Based on the Draft Decree on the Social Security System for Employees, amended final draft, November 1998.

3. Health care benefit

Covered population

- Insured workers and their spouses.

- Children of insured workers, under the age of 18, or until the age of 25 if in full-time and continuous education. In case of severe handicap, they are covered without any age conditions.

- Other members of the family, such as dependant parents residing in the same household, may apply for voluntary insurance.

- Retired workers who voluntarily pay the health care contribution

Qualifying condition

At least 3 months' contribution within a 12 months period ending 3 months prior the date of the claim for care. This condition does not apply for emergency cases. The validity is for 6 months after cessation of continuous payment.

Provider payment system

The provider payment for a defined list of services is made on a capitation basis per covered person. In addition, the SSO reimburses the providers for specialised high cost services outside the defined list of services. For emergency care, an insured person is reimbursed even if the services are provided by a non-contract hospital.

4. Sickness benefit

To whom payable

- Insured persons, who have to temporarily interrupt their work as the result of an illness or an accident. If the illness or accident results in partial activity, the insured person is entitled to a partial benefit in proportion to the reduced activity.

- Female workers who cannot be employed at certain types of work during pregnancy or in the 6 months following confinement, are entitled to this benefit, when no suitable temporary duties can be found by the enterprise.

Qualifying conditions

Contributions for at least 3 months within a 12 month period, and the exhaustion of entitlement to statutory sick pay or sick leave on the part of employer (maximum 30 days in a calendar year).

Benefit rate

60% of the insured earnings. Insured earnings are the average earnings over the six month period preceding the interruption of the activity.

Upon relapse, after the resumption of work, the benefit rate is resumed at the same level as before. If work is resumed for at least three months and the insured person has earned more than before, then the benefit, in case of relapse, is adapted to the new level of earnings.

In case of partial resumption of the activity, the benefit equals 60% of the difference between the earnings from the reduced activity and the previous earnings.

Duration of benefit

Sickness benefit is paid for a period of up to one year after the expiry of the period of statutory sick pay or sick leave, paid by the employer.

Payment of the benefit may be extended for a maximum of six months, if at the end of that period the incapacity to work persists but a return to work is considered probable within six months.

If after the normal period of one year, the incapacity to work persists but no return to work within six months seems probable, then invalidity pension is claimed.

5. Maternity benefit

To whom payable

Female workers who interrupt work because of pregnancy or maternity. Under certain conditions, the benefit is also granted for a miscarriage, and for the adoption of a child.

Qualifying condition

Contributions for at least 9 months within the previous 12 months.

Benefit rate

The benefit is equal to 70% of the insured earnings, calculated in the similar way as for sickness benefit.

Duration

Benefits are payable during the period of maternity leave. In case of inability to resume work after this period, because of medical treatment related to pregnancy or birth, the worker is entitled to sickness benefit.

6. Birth and Death grant

Birth Grant

To whom payable

The insured mother or the dependent spouse of the insured worker, at the time of the confinement. The benefit may also be paid to the person who adopts a young baby within its first year of life, provided that no other birth grant has been paid for the same baby

Qualifying conditions

Contributions for 12 months out of the last 18 months.

Benefit rate

The amount of the birth grant is 60% of the monthly minimum wage per child.

Death grant

To whom payable

The relatives of the victim who take care of the funeral. If there are no direct relatives the benefit is paid to any person or persons who can prove, by means of invoices or other conclusive document, that they have paid the expenses involved with the funeral.

Qualifying conditions

Same as birth grant (contributions for 12 months out of the last 18 months).

Benefit rate

- In case of the death of a worker, the amount of death grant is equal to 6 months of insurable earnings.

- In case of the death of the spouse of a worker, a death grant of 3 months' insurable earnings is payable.

- In case of the death of a worker's child, the death grant is equal to 2 months' insurable earnings.

7. Employment Injury benefit

To whom payable

- Insured workers who had work-related accident or disease;

- Students and trainees, when their study or training includes practical work, in case of accident or disease related to this practical work;

- Persons who sustained injuries while coming to the rescue in the case of a fire or a serious accident.

In the latter two cases, the cost of benefits is subsidised by the State.

Qualifying condition

There is no condition of a minimum duration of insured employment.

Benefits

(a) Medical care benefit

Medical care benefit is provided to an injured worker for the whole duration of the medical condition to compensate for the need of medical care, including rehabilitation. If the cost is financed partially from another source, the SSO pays the difference between the benefit and the actual cost of the care.

(b) Temporary incapacity benefit

This benefit is provided during the period immediately following the interruption of work due to a work-related injury or disease, to compensate for the loss of earnings. This benefit is payable as long as the worker is unable to resume work.

The benefit is equal to 100% of the insured earnings (average of the last 6 months) during the first 6 months of absence from work. During the next 12 months it is reduced to 60% of the insured earnings.

(c) Permanent disability benefit

If the work-related injury or disease causes permanent loss of earning capacity, the victim may apply for a permanent disability benefit, payable until the pension age. When a temporary disability benefit has been paid for 18 months, automatically, an application for a permanent disability is made by the SSO for the victim. The degree of disability is determined by a special disability assessment unit, established in the SSO.

The permanent disability benefit is calculated by applying the percentage of permanent loss of earning capacity to 67.5% of the reference earnings (average of insured earnings over a period of one year before the interruption of work due to the work-related injury or disease). The benefit is normally paid in the form of periodical (monthly) payments.

(c) Carer's benefit

If the accident or the disease causes a serious loss of autonomy of the victim, resulting in the need of frequent or constant attendance by other persons for ordinary activities of daily life, a carer's benefit is paid.

The benefit is calculated according to the number of hours of care required by the victim per month, at the rate of the Government's established minimum wage.

(d) Funeral benefit

Upon the death of a worker due to the injury or the disease, the SSO pays a funeral benefit.

The benefit is equal to 6 months of the insured earnings. It is paid under the same conditions as the death grant, but without any minimum insurance period.

(e) Survivors' benefit

In case of the death of the victim, the surviving relatives are entitled to a survivors' benefit to compensate for the loss of support suffered by them. These benefits include:

- In case of a widow, this benefit is provided if she is at least 44 years of age; although this condition does not apply if the widow is handicapped or invalid for work, or in charge of children. In case of a widower, the survivor's pension is payable if the widower is handicapped or unable to work.

- Surviving children's benefit is paid to the children of the deceased worker up to the age of 18, or up to the age of 25 if they are engaged in full-time education. A handicapped offspring, who is unable to earn a normal income, continues to be entitled to this benefit after the age of 25.

- Surviving parents' benefit is paid to the parents if the victim did not leave a surviving spouse, and if the parents can prove that the victim was their main source of financial support. This benefit ends at the standard pension age.

The survivors' benefits are calculated as a percentage of the reference earnings, in the same way as for the permanent disability benefit. The surviving spouse's benefit or the surviving parent's benefit equals 50% of the reference earnings. The surviving child's benefit equals 15% of the same reference earnings per child. If there are neither surviving spouse nor entitled surviving parents, this benefit is increased to 20% with a maximum of 60% for all children. The total benefit for all surviving relatives can not exceed the maximum amount of the permanent disability benefit to which the deceased could have been entitled.

8. Old-age pension benefit

Normal pensionable age

The normal pensionable age is 60 years. Early retirement pensions are payable at earliest 5 years before the normal pensionable age, in which case the pension amount is reduced by 0.5% per month of anticipation.

Qualifying condition

Contributions for at least 5 years. For a worker without having made the qualifying condition for pension, a lump-sum is payable.

Benefit calculation

The pension amount is calculated on the basis of the following two factors:

(a) Pension points:

One full pension point is earned by the worker whose earnings, during a calendar year, have been equal to the average of all earnings of workers insured under the scheme in that year. If the earnings of the worker are higher or lower, his pension points are calculated proportionately.

(b) The average wage:

The average wage is the average of all the insured earnings of workers under the scheme, in the year before that in which the pension is to be paid for the first time.

The amount of pension is calculated as the product of (i) 1.5% (accrual benefit rate); (ii) the total pension points earned by the worker over the whole insurance period; and, (iii) the average wage at the time of award.

Insurance periods comprises of the periods in which insurance contributions, compulsory or voluntary, have been paid. Some assimilated periods are credited as insurance periods, if they are immediately preceded by insurance periods. These are periods for which:

(i) sickness, maternity or temporary disability (work injury) benefit is paid; or,
(ii) permanent disability (work injury) benefit is paid for a degree of disability of more than 60%; or,
(iii) carer's benefit is paid.

Transitional measure

Additional pension credits are granted for insured workers who are older than 30 years of age at the outset of the scheme. For workers aged 45 and over, additional 15 contribution years on the basis of 0.8 pension points is validated; and, for workers aged 44 and under, the additional contribution years is linearly reduced by 1 year per age.

9. Survivors' pension benefit

To whom payable

Surviving members of the family at the death of a worker.

Qualifying conditions

Contributions for at least five years.

Types of benefits

(a) Adaptation benefit for the surviving family

This benefit is payable during the year after the death of an insured worker to the spouse and children (up to the age of 18 years, or 25 years if the child is engaged in full-time education, or indefinitely if the child is disabled).

This benefit equals 80% of the insured earnings of the worker during the year before his death.

(b) Survivor's pension

This is payable for the surviving spouse, possibly after the expiration of the adaptation benefit, for the remainder of the lifetime of the spouse. In case of a widow, this benefit is provided if she is at least 44 years of age; although this condition does not apply if the widow is handicapped or invalid for work, or in charge of children. In case of a widower, the survivor's pension is payable if the widower is handicapped or unable to work.

If the deceased worker was in receipt of an old age insurance pension, the survivor's pension is equal to 60% of this pension.

If the worker dies before receiving an old age pension, the survivors' pension is equal to 60% of the hypothetical invalidity pension of the deceased.

(c) Orphan's pension for the eligible children.

This benefit is paid to the worker's children up to the age of 18 years, or 25 years if the child is engaged in full-time education, or indefinitely if the child is disabled as to be unable to find suitable work in the normal labour market.

The orphan's pension is equal to 20% of the old-age pension or of the hypothetical invalidity pension as used for the calculation of the survivor's pension.

10. Invalidity pension benefit

To whom payable

Insured workers who are unable to continue their occupation because of bad health, permanently or at least for the foreseeable future.

Qualifying condition

Contributions for at least 5 years; and, working in an insured occupation at the time of interruption of work.

At age 60, the invalidity pension is replaced by an old-age pension of the same amount.

Benefit calculation

Invalidity pension is calculated in the same way as the old-age pension, except that the years remaining until the normal pensionable age are also counted as insurance year (the same average pension points as he earned in the years before his invalidity is credited for this period).

Annex B: Description of social security provisions for public sector workers

1. Legislation on social security

The provisions governing the social security provisions are stipulated in various forms of legislation. The major provisions can be summarised as follows:

Provisions in the Constitution

On 14 August 1991, the Constitution was adopted, in which Articles 20 and 26 refer to social protection in Lao PDR.

Article 20 provides that the State takes care of:

- the development of services of public health and authorizes the private sector to provide medical services in conformity with the regulations of the State;
- war invalids, of families of persons who sacrificed their life for the Country, of those who distinguished themselves vis-a-vis the country, and of retired civil servants.

Article 26 provides the Lao citizens right to work and to execute a profession not forbidden by law. It provides the workers the right:

- to rest;
- to medical care in case of illness;
- to assistance in case of incapacity to work, invalidity, old age or in other cases determined by law.

Decrees and regulations for the public sector

The following decrees relate to social security provisions in the public sector:

- Decree 54/CCM on social insurance for civil servants, public employees and the military was promulgated on 22 December 1986. It covered sickness, convalescence, maternity, old age and death benefit.

- Decree 4/PM, promulgated on 14 August 1991, on the role and the function of the newly-formed MOLSW. It transferred some existing departments from other Ministries and created a few new ones, such as the Social Security Department.

- Decree 171/PM, promulgated on 11 November 1993, on the statute of the civil servants. This decree mentions the entitlements of the civil servants, military and police to sickness, maternity and old-age benefit and to child allowance.

- Decree 178/PM, promulgated on 30 November 1993, on the social security scheme for civil servants, military and police.

- Regulation 2282, implemented on 12 October 1994, based on Decree 178/PM, gives detailed entitlements on medical care, convalescence and old-age benefit.

2. Contributions

Decree 97/PMC, promulgated on 25 December 1989 called upon all civil servants to contribute 6 per cent of their monthly salary to the Social Security Fund. Before this, the benefits were not linked to contributions. Since 1991, the contributions are retained at the source by the Treasury Department, MoF. Since 1 October 1992, the Budget Department, MoF, has treated the Social Security Fund separately from other revenues.

The Decree 178/PM, which came into effect on 1 January 1994, retained the contribution rate of 6 percent of the basic salary, for the active civil servants, military and police and sets the contribution from the State budget according to the financial rules.

3. Medical care benefit

To whom payable

- civil servants (active, invalid and retired pensioners)
- military and police staff;
- children of active civil servants and invalid and retired pensioners, up to 18 years of age;
- spouses of civil servants who are not the civil servants themselves.

Benefits

- In case of sickness, work related or not, those covered are entitled to medical care in the assigned hospital. The MoH will cover the cost of the room, medical equipment, food and other services. The MoH has a budget allocated for covering these expenses. (Decree 178/PM)

- In the case of non-work related accidents, the medical costs will be covered for 50 per cent by the SSF.(Decree 178/PM)

Benefits provided by the SSF are medical examination, cost of medicines, medical tests, artificial limbs and X-rays. The MoH will cover the cost of the room, medical equipment, food and other services. (Regulation 2282)

In case of work-related sickness or injury, the insured person is required to pay appropriate charges and claim reimbursement; expenses are reimbursed as follows:

- medical examination - cost of up to 3 each year within a cost per visit of 5,000 Kip.
- hospitalization - up to 40,000 Kip per hospitalization, maximum 3 times a year (if this amount is insufficient to meet the costs of a required operation, additional amount of up to 60,000 Kip is provided)
- optical treatment (dependants excluded) - up to 10,000 Kip every three years
- dental treatment (dependants excluded) - up to 50,000 Kip, only once (Regulation 2282)

In case of non-work related accidents the insured person, as well as a spouse and children, younger than 18 years old, of the civil servants/pensioners, will be reimbursed only 50% of these amounts. (Dependants are not covered for optical and dental care). (Regulation 2282)

4. Sickness Benefits

To whom payable

Sickness Benefit is payable to civil servants who are sick themselves (Decree 54/CCM Art.6) or whose children are sick (Decree 54/CCM Art. 8)

Benefit

The civil servant who is sick, is entitled to 30 days sick leave per year at full salary, not exceeding 7 days per time (Decree 54/CCM Art. 6). If an infant child of a civil servant becomes ill, the civil servant is allowed leave not exceeding 30 days will full salary. Beyond the 30 day period, only 60% of the basic salary will be paid. (Decree 54/CCM Art.8)

In case of hospitalization of sick civil servant, the employee receives full salary for 30 days, after which, 80% of full salary is paid for up to 12 months. Beyond this period, the case is referred to the Medical Council which determines the rate of invalidity (Decree 178/PM).

5. Invalidity benefit (convalescence allowance)

To whom payable

Insured person who has exhausted his 30 days of sick leave in a year and has lost his entitlement to full salary. This benefit has been discontinued; however those who had an entitlement to this benefit prior to 1 January 1994, and those who have 20 years of service, but are not yet retired, can still claim this benefit. Invalidity benefit has now replaced the convalescence allowance.

Benefit

Upon presentation of a medical certificate, the insured person receives convalescence allowance as follows (Regulation No. 54):

- if 5 years of service or less, 60% of the last basic salary
- if up to 10 years of service, 65% of the last basic salary
- if up to 15 years of service, 70% of the last basic salary
- if up to 20 years of service, 75% of the last basic salary
- if up to 25 years of service, 80% of the last basic salary
- if more than 25 years of service, 90% of the last basic salary
- revolutionaries are entitled to 100% of the last basic salary

Regulation 2282 reduced the coverage of Regulation No. 54, and invalidity benefit has replaced the convalescence allowance. Insured persons with more than 5 years of service, with a loss of working capacity of more than 80% are now entitled, upon presentation of the medical certificate, to an invalidity benefit of 70% of their last basic salary until recovery or death.

6. Maternity benefit

To whom payable

This benefit is payable to an insured person who becomes pregnant (178/PM)

Benefit

- free medical advice during pregnancy and full salary for the day of the consultation

- 3 months maternity leave at full salary

- additional allowance of 60% of basic minimum salary for each child, upon confinement

- in the event of miscarriage, medical care and sick leave as determined under sickness benefit rules

- if recovery takes more than the period of maternity leave, additional paid sick leave.

The cost of medical examinations, medical treatment and confinement are covered by the SSF as follows (Regulation 2282):

- medical examinations - up to 5,000 Kip per visit, maximum 3 times a year

- hospitalization - up to 40,000 Kip per hospitalization, maximum 3 times a year (if this amount is insufficient to meet the costs of a required operation, additional amount between 10,000 and 60,000 Kip is provided).

7. Child allowance

To whom payable

Child allowance is payable to civil servants and pensioners for each child under 18 years of age. Upon the death of a civil servant or pensioner, the studying children continue to receive the allowance up to age 18. (Decree 178/PM and Regulation 2282)

Benefit

For families where one parent is a civil servant/pensioner,

- 4,500 Kip per month for the first child,
- additional 2,250 Kip per month for each additional child. (Regulation 2282)

For families where both parents are civil servants/pensioners,

- 4,500 Kip per month for each child. (Regulation 2282)

If an employee leaves the civil service without qualifying for a pension, a lump-sum payment of 12 months' child allowance for each child under 18 is payable (Decree 178/PM).

Upon the death of a civil servant, each surviving child receives 10% of the deceased parent's salary, in addition to continued entitlement to child allowance

(Regulation 2282). Upon the death of a pensioner each child, under the age of 18 receives 10% of the pension if studying, or 20% of the pension if not studying in addition to continued entitlement to child allowance (Regulation 2282 and Decree 178/PM).

8. Survivors' benefit

To whom payable

Upon the death of an insured person, the surviving spouse receive a death grant which comprises of funeral grant and an additional lump-sum payment. (Decree 178/PM) In case there are no survivors, the funeral benefit will not be paid and the regional administration will take care of the funeral.(Regulation 2282).

Where an invalid pensioner dies, a surviving carer is entitled to the benefit.

No provision exists for the payment of pension to the surviving spouse.

Child allowances continue to be paid for each child under age 18 following the death of a civil servant/pensioner parent. (Decree 178/PM and Regulation 2282)

Benefit

The funeral grant, upon the death of an insured is equal to

- the basic salary of the last 10 months before death of the insured person, or
- 12 times the basic minimum salary, in rural areas.(Decree 178/PM)

The lump-sum payment to survivors, based on seniority of the deceased person is as follows:

- 3 years of seniority, 6 times the last monthly basic salary
- 3-10 years of seniority, 8 times the last monthly basic salary
- 10-20 years of seniority, 12 times the last monthly basic salary
- more than 20 years of seniority, 15 times the last monthly basic salary (Decree 178/PM)

Each child, in addition to receiving continued payment of child allowance after the civil servant parent/pensioner's death, also receives 10% of the salary/pension of the deceased parent until the age of 18.

The carer, upon the death of an invalid pensioner receives a benefit equal to 12 times of the minimum salary of a civil servant.

9. Termination payment

To whom payable

Civil servants who agree to voluntary retrenchment are entitled to termination payments.

Benefit rate

The benefit is the sum of the following items:

- 1 month's salary for each year of service;
- 1 month's salary; and,
- 1 year's children allowance.

10. Employment Injury (short-term)

To whom payable

Insured employees in case of work related injury or occupational disease.

Benefit

All medical expenses (including medical examinations, tests, X-rays and artificial limbs) are paid for from the SSF. (Decree 178/PM)

The employee is entitled to full salary for the first 6 months, and 80% of the salary for the following 6 months. After 12 months the employee's entitlement to invalidity pension is assessed by the Medical Council. The employee receives in addition, the amount due to a civil servant leaving service. (Decree 178/PM)

The patient is reimbursed for the costs of medical care as follows:

- medical examination - cost of up to 5,000 Kip per visit, up to 3 each year.
- hospitalization - up to 40,000 Kip per hospitalization, maximum 3 times a year (if this amount is insufficient to meet the costs of a required operation, additional amount of up to 60,000 Kip is provided)
- optical treatment - up to 10,000 Kip every three years
- dental treatment - up to 50,000 Kip, only once (Regulation 2282)

11. War Invalidity and employment injury benefit (long-term)

To whom payable

Insured employees who are disabled due to work-related injury or as the result of war (Decree 178/PM)

Benefit

Retired or working invalids residing in on of the invalidity centres, receive the following life-long benefit (Decree 178/PM):

-	Special category (81-100% disabled):	100% of the last basic salary plus an allowance equal to 100% of minimum basic salary for carer
-	Category I (71-80% disabled):	40% of basic minimum salary
-	Category II (61-70% disabled):	30% of basic minimum salary
-	Category III (51-60% disabled):	20% of basic minimum salary
-	Category IV (41-50% disabled):	10% of basic minimum salary.

Invalids returning voluntarily to their villages and those going to live in rural areas, without pension or salaries are entitled to:

-	Special category (81-100% disabled):	150% of the last basic salary plus an allowance equal to 100% of minimum basic salary for carer
-	Category I (71-80% disabled):	100% of basic minimum salary
-	Category II (61-70% disabled):	80% of basic minimum salary
-	Category III (51-60% disabled):	60% of basic minimum salary
-	Category IV (41-50% disabled):	40% of basic minimum salary.

The SSF covers 100% of the cost of artificial limbs as determined by the State.(Decree 178/PM)

12. Retirement pension

To whom payable

- Those who participated in the revolution before 1954;
- Those who participated in the revolution before from 1954 until December 1975;
- Those who joined the administration after 1975;
- Those who worked under the previous administration and who are still currently working. (Decree 178/PM)

Qualifying period

General requirement is 25 years of service and attaining age 60 for men, 55 for women.

For revolutionaries and the workers who have worked in hazardous conditions for 5 years or more, the qualifying period is shortened to 20 years of service and the pensionable age is reduced at age 55 for men, 50 for women. (Decree 178/PM)

Benefit

For revolutionaries who were working before 1954, the amount of benefit is 80 % of the basic pre-retirement salary after 20 years service, plus an accrual rate of 1% for each additional year of service, up to a maximum of 100% of salary. (Decree 178/PM)

For revolutionaries and those who worked in hazardous circumstances for 5 years or more, or who worked between 1954 and December 1975, the benefit is 75% of their last basic salary after 20 years of service, plus an accrual rate of 1% for each additional year of service, up to a maximum of 90%. (Decree 178/PM)

For civil servants working from December 1975 or who worked throughout for both administrations, the pension amount is 75% of their basic pre-retirement salary after 25 years of service, plus an accrual rate of 1% for each additional year of service, up to a maximum of 90% of salary.[2] (Decree 178/PM)

[2]However, the years of service under the former administration is regarded as one-third for the pension calculation.

Annex C: Survey on incidence rates of short-term benefits

In order to collect data on the frequencies of the risks of short-term benefits of the private sector scheme, a statistical survey was carried out in 1997. In this survey, a sample of 45 companies (10 or more employees) was selected from the 1994 Labour Force Survey, of which 23 in industry sector and, 22 in services sector. A questionnaire form was designed in September 1997 and translated into Lao. It asks the questions concerning the size and activity of the company, and the occurrence of sickness, maternity and occupational accidents and diseases. An additional question was included to obtain information about the current social security provisions provided by the employers. The questionnaire form has been attached as Table C-1.

Replies were received from 27 companies. After consistency check, replies from 25 companies were used. These consist of 13 industrial companies with 1,905 employees and 10 companies in services with 529 employees. In order to reflect the composition of the total employees, the sample results have been re-weighed according to the results of 1994 Labour Force Survey.

Table C-2 provides the main sample results (means, standard deviations and the upper bounds of 95%-confidence intervals) by industry and services, and the estimates after re-weighting.

Table C-1 : Questionnaire of the survey on incidence rates of short-term benefits

QUESTIONNAIRE (CONFIDENTIAL) Registration No. ....

Please will you fill out all items and return the application form within two weeks to:

Ministry of Labour and Social Welfare
Department ....
Adress

If you have any comments, please use the back side of this form.

Number of employees:

1) Present number of employees in your company (both technical and administrative):

Male: .... **Female:** .... **Total:** ....

Main activity of the company:

2) What is the main activity of your company?:

- Agriculture ☐
- Mining ☐
- Construction ☐
- Elect./ gas / water supply ☐
- Manufacturing ☐
- Transport/communication ☐
- Trade ☐
- Hotels/ restaurants ☐
- Finance ☐
- Services ☐

Other ....

Sickness

Sickness is defined here as a temporary interruption of work after which the worker is supposed to return to his previous job. Employment injuries , occasional diseases or maternity are excluded (see below).

3) How many of the employees above are absent at this moment because of sickness?:

Male: .... **Female:** .... **Total:** ....

4) How many of these sick employees have presented a medical certificate?:

Male: .... **Female:** .... **Total:** ....

5) How many of the sick employees mentioned in question 4 have been sick more than 30 days during the last 365 day

Male: .... **Female:** .... **Total:** ....

6) Do those figures present a normal situation in your company? yes / no

If not , please give also (an estimation of) the normal situation in your company in case of the questions 3, 4 and 5:

question 3:	**Male:**	**Female:**	**Total:** ....
question 4:	**Male:**	**Female:**	**Total:** ....
question 5:	**Male:**	**Female:**	**Total:** ....

Maternity

7) How many of the female employees ceased from work during the last 365 days because of pregnancy?: ....

8) How many of them have resumed work or are supposed to resume work in your company?: ....

9) What is the average (estimated) age of the female employees in your company?: ....

Occupational accidents and diseases

Any accident occuring during the performance of occupational duties at the workplace or at any other place in accordance with the instructions of the employer is considered as work related accident. Accidents on the way to and from work are not included. Any disease caused by the practice of the worker's occupation is considered as an occupational disease.

10) How many employees were involved in occupational accidents or occupational diseases during the last 365 days, resulting in:

- (expected) temporary disability: ....
- (expected) permanent disability: ....
- the death of the employee: ....

total ....

11) Please can you enter the (expected) average duration (from the start of the disability to the complete reemployment) of the temporary disabled employees entered in question 10: ....weeks.

12) For how many of the temporary disabled employees mentioned in question 10 is the duration of the disability longer than 180 days? ....

Social security fund, providential fund or welfare fund

13) Does your company have a social security fund, providential fund or welfare fund? yes / no

14) In case you have such a fund, please can you indicate how much of the total wage bill is paid by the employer and by the employees:

........% of the total wage bill by the employer
........% of the total wage bill by the emplyees

15) Which kind of provisions are covered by this fund:

- sickness leave ☐
- maternity leave ☐
- employement injury ☐
- medical care ☐
- death grant ☐
- others ....

Name:.. Date:................ Telnr.......................

Signature:..............................

Table C-2: Main results of the survey

	Industry	Services	Total
<u>**Number of employees by sector in enterprises with 10 or more workers:**</u>			
total as estimated from LFS 94 and Census 1995	**32,000**	**40,000**	**72,000**
in percents	*44.4%*	*55.6%*	*100.0%*
in sample	**1,905**	**529**	**2,434**
in percents	*78.3%*	*21.7%*	*100.0%*
Sample means (percentage of total workers)			
Absent days because of sickness 1)	4.1%	4.1%	4.1%
Absent days because of sickness >30 days 1)	0.4%	0.7%	0.6%
Females who ceased work during last year because of pregnancy 2)	3.8%	8.1%	6.2%
Employees who were involved in work injury or occupational disease 3)	0.2%	0.6%	0.4%
Standard deviations			
Absent days because of sickness 1)	0.5%	0.9%	0.7%
Absent days because of sickness >30 days 1)	0.1%	0.3%	0.2%
Females who ceased work during last year because of pregnancy 2)	0.8%	1.9%	1.4%
Employees who were involved in work injury or occupational disease 3)	0.1%	0.3%	0.2%
95% upper confidence bounds			
Absent days because of sickness 1)	5.0%	5.8%	5.4%
Absent days because of sickness >30 days 1)	0.7%	1.4%	1.1%
Females who ceased work during last year because of pregnancy 2)	5.3%	11.9%	9.0%
Employees who were involved in work injury or occupational disease 3)	0.3%	1.2%	0.8%

1) as a % of total working days
2) as a % of total female employees
3) as a % of total employees

Annex D: Supplementary tables

Table D-1: Estimated population in the Lao PDR by sex and age-group, 1995- 2050

	1995	2000	2005	2010	2015	2020	2025
Both sexes							
0-4	720,297	734,675	805,720	884,456	922,283	900,604	850,171
5-9	697,352	677,854	695,523	769,480	851,673	894,743	878,861
10-14	605,838	690,012	671,963	690,413	764,859	847,549	891,266
15-19	454,963	601,079	685,406	668,207	687,250	761,997	844,973
20-24	365,048	450,385	595,963	680,538	664,304	684,010	759,093
25-29	340,961	360,579	445,737	590,830	675,723	660,473	680,834
30-34	281,593	336,109	356,209	441,190	585,806	670,987	656,667
35-39	265,945	276,642	331,011	351,601	436,358	580,379	665,782
40-44	181,814	259,632	270,879	325,042	346,171	430,585	573,759
45-49	156,928	175,663	251,747	263,629	317,487	339,216	423,063
50-54	133,236	149,064	167,731	241,500	254,138	307,479	329,858
55-59	109,812	123,379	138,869	157,358	227,991	241,464	293,894
60-64	89,916	97,600	110,789	125,720	143,837	210,130	224,401
65-69	67,917	75,175	82,615	95,074	109,103	126,445	186,697
70-74	46,222	51,756	58,247	65,076	76,283	88,843	104,718
75+	57,007	60,860	64,228	70,899	81,203	96,960	117,035
Total	**4,574,849**	**5,120,462**	**5,732,636**	**6,421,016**	**7,144,469**	**7,841,864**	**8,481,074**
Males							
0-4	363,304	366,259	402,421	442,447	462,013	451,717	426,688
5-9	355,166	340,201	345,047	382,693	424,490	446,835	439,617
10-14	311,081	351,113	336,951	342,219	380,089	422,124	444,791
15-19	223,137	308,486	348,579	334,871	340,442	378,440	420,593
20-24	170,009	220,900	305,807	345,985	332,758	338,653	376,773
25-29	161,192	167,952	218,591	303,071	343,363	330,638	336,851
30-34	137,454	158,797	165,781	216,172	300,215	340,627	328,397
35-39	133,837	134,757	156,060	163,304	213,412	296,937	337,432
40-44	90,657	130,157	131,455	152,698	160,250	209,989	292,796
45-49	76,414	87,056	125,487	127,241	148,385	156,294	205,469
50-54	60,588	71,934	82,439	119,454	121,756	142,704	150,979
55-59	53,128	55,374	66,231	76,504	111,624	114,539	135,069
60-64	43,181	46,450	48,895	59,058	68,939	101,477	104,971
65-69	34,138	35,370	38,510	41,071	50,248	59,454	88,436
70-74	21,929	25,422	26,719	29,549	32,050	39,850	47,928
75+	25,773	27,527	29,676	31,785	35,414	39,779	48,292
Total	**2,260,988**	**2,527,754**	**2,828,650**	**3,168,122**	**3,525,447**	**3,870,058**	**4,185,083**
Females							
0-4	356,993	368,416	403,298	442,009	460,271	448,886	423,483
5-9	342,186	337,653	350,475	386,787	427,183	447,908	439,244
10-14	294,757	338,898	335,012	348,194	384,770	425,424	446,475
15-19	231,826	292,592	336,827	333,336	346,809	383,557	424,380
20-24	195,039	229,485	290,156	334,553	331,546	345,357	382,321
25-29	179,769	192,627	227,146	287,759	332,360	329,835	343,984
30-34	144,139	177,312	190,428	225,018	285,591	330,360	328,269
35-39	132,108	141,885	174,952	188,297	222,946	283,442	328,349
40-44	91,157	129,475	139,424	172,344	185,921	220,596	280,963
45-49	80,514	88,606	126,260	136,388	169,101	182,921	217,594
50-54	72,648	77,130	85,292	122,046	132,382	164,775	178,879
55-59	56,684	68,005	72,638	80,854	116,367	126,925	158,825
60-64	46,735	51,150	61,893	66,662	74,898	108,653	119,431
65-69	33,779	39,806	44,105	54,003	58,855	66,991	98,261
70-74	24,293	26,334	31,527	35,527	44,232	48,993	56,790
75+	31,234	33,333	34,552	39,115	45,789	57,182	68,743
Total	**2,313,861**	**2,592,708**	**2,903,986**	**3,252,894**	**3,619,021**	**3,971,806**	**4,295,992**

	2030	2035	2040	2045	2050
Both sexes					
0-4	791,936	803,363	847,880	859,076	842,584
5-9	833,401	778,907	791,719	837,370	850,306
10-14	876,098	831,234	777,197	790,215	835,992
15-19	889,042	874,265	829,748	775,966	789,048
20-24	842,343	886,731	872,325	828,104	774,479
25-29	756,216	839,683	884,342	870,231	826,194
30-34	677,616	753,211	836,818	881,640	867,688
35-39	652,354	673,851	749,570	833,162	877,916
40-44	659,238	646,751	668,816	744,479	827,710
45-49	564,894	650,229	638,825	661,409	736,545
50-54	412,700	552,368	637,179	626,951	649,801
55-59	316,863	397,954	534,127	617,660	608,630
60-64	275,163	298,485	376,606	507,150	588,115
65-69	201,441	249,271	272,415	345,709	467,398
70-74	156,629	171,122	214,098	236,146	301,738
75+	142,497	198,947	247,516	310,673	366,101
Total	**9,048,431**	**9,606,372**	**10,179,181**	**10,725,941**	**11,210,245**
Males					
0-4	397,388	403,218	425,805	431,199	421,787
5-9	417,149	389,801	396,394	419,593	425,789
10-14	437,933	415,787	388,711	395,426	418,705
15-19	443,415	436,760	414,817	387,914	394,714
20-24	419,006	441,965	435,513	413,775	387,053
25-29	375,055	417,350	440,440	434,190	412,665
30-34	334,897	373,163	415,506	438,720	432,686
35-39	325,694	332,498	370,806	413,177	436,524
40-44	333,262	322,091	329,253	367,568	409,934
45-49	287,152	327,468	317,003	324,601	362,862
50-54	199,210	279,189	319,153	309,583	317,724
55-59	143,618	190,373	267,753	307,013	298,591
60-64	124,637	133,356	177,825	251,234	289,212
65-69	92,294	110,517	119,187	160,162	227,601
70-74	72,083	76,034	92,003	100,218	136,049
75+	59,615	84,311	102,455	124,591	144,126
Total	**4,462,410**	**4,733,884**	**5,012,625**	**5,278,965**	**5,516,021**
Females					
0-4	394,548	400,145	422,075	427,877	420,798
5-9	416,252	389,106	395,325	417,778	424,517
10-14	438,164	415,446	388,486	394,788	417,287
15-19	445,627	437,505	414,931	388,052	394,334
20-24	423,337	444,766	436,813	414,328	387,426
25-29	381,161	422,333	443,902	436,042	413,529
30-34	342,719	380,048	421,312	442,920	435,002
35-39	326,660	341,353	378,764	419,985	441,392
40-44	325,976	324,659	339,563	376,911	417,776
45-49	277,742	322,761	321,821	336,807	373,684
50-54	213,490	273,178	318,026	317,368	332,077
55-59	173,245	207,581	266,374	310,647	310,039
60-64	150,526	165,129	198,781	255,916	298,902
65-69	109,147	138,754	153,228	185,547	239,797
70-74	84,546	95,089	122,095	135,928	165,689
75+	82,882	114,636	145,061	186,083	221,975
Total	**4,586,021**	**4,872,487**	**5,166,556**	**5,446,976**	**5,694,224**

Table D-2: Estimation of employment by sector (1995)

	Employment total	Employment in companies>5 ("formal sector")	Employment in companies >=10
Agriculture	**1,853,000**	**-**	**-**
Non-agriculture	**253,000**	**147,000**	**142,000**
of which:			
- private sector	183,000	76,000	72,000
- public sector	70,000	70,000	70,000
Breakdown of private sector (non -agriculture):			
Industry total	**50,000**	**33,000**	**32,000**
- mining	1,000	1,000	1,000
- construction	10,000	7,000	7,000
- utilities	4,000	4,000	4,000
- manufacturing	35,000	21,000	20,000
Service total	**133,000**	**43,000**	**40,000**
- transport/communication	18,000	11,000	10,000
- trade	89,000	17,000	15,000
- hotels/restaurants	10,000	6,000	6,000
- finance	16,000	9,000	8,000
Total	**2,106,000**	**147,000**	**142,000**

Compilation of data from:
Census 1995
Labour force survey 1994
Ministry of Industry and Handcraft

Table D-3: Employment elasticity with respect to real GDP growth, by sector

Sector	**Elasticity rate**
Agriculture	0.40
Mining	0.75
Construction	0.88
Utilities	0.86
Manufacturing	0.57
Transport/communication	0.81
Trade	0.77
Hotel/restaurants	0.63
Finance	0.83

Source: World Bank and Labour Force Survey 1994

Table D-4: Population and employees in private sector by sex, age and marital status, 1995

Age	Never Married	Married	Divorced/ Separated	Widowed	Total
POPULATION					
Males					
0-4	363,223	0	0	0	363,223
5-9	355,119	0	0	0	355,119
10-14	309,452	1,484	111	39	311,086
15-19	209,013	13,291	758	160	223,222
20-24	96,570	70,213	2,648	522	169,953
25-29	34,490	123,211	2,662	892	161,255
30-34	10,282	124,021	1,989	1,057	137,349
35-39	4,922	125,813	1,677	1,488	133,900
40-44	2,214	85,977	1,121	1,418	90,730
45-49	1,550	72,102	956	1,809	76,417
50-54	1,212	56,159	826	2,333	60,530
55-59	930	48,424	912	2,803	53,069
60-64	875	37,738	798	3,805	43,216
65-69	671	28,667	811	3,980	34,129
70-74	587	16,734	625	3,916	21,862
75+	924	17,163	703	7,136	25,926
Total	**1,392,034**	**820,997**	**16,597**	**31,358**	**2,260,986**
Females					
0-4	356,955	0	0	0	356,955
5-9	342,134	0	0	0	342,134
10-14	293,886	785	119	37	294,827
15-19	186,092	42,807	2,482	337	231,718
20-24	63,496	122,904	7,436	1,104	194,940
25-29	21,665	148,323	7,828	2,054	179,870
30-34	9,510	125,367	6,267	3,104	144,248
35-39	6,298	115,199	5,841	4,808	132,146
40-44	3,870	76,013	4,725	6,585	91,193
45-49	2,986	63,858	4,379	9,250	80,473
50-54	2,629	50,645	3,992	15,347	72,613
55-59	1,729	37,293	3,018	14,532	56,572
60-64	1,621	24,959	2,241	17,944	46,765
65-69	1,160	16,473	1,520	14,724	33,877
70-74	912	8,742	897	13,629	24,180
75+	1,444	8,185	1,051	20,671	31,351
Total	**1,296,387**	**841,553**	**51,796**	**124,126**	**2,313,862**
EMPLOYEES IN PRIVATE SECTOR					
Males					
<20	4,727	183	17	1	4,928
20-24	8,349	2,493	123	11	10,976
25-29	4,130	6,242	202	22	10,596
30-34	1,200	6,980	180	30	8,390
35-39	356	6,513	139	34	7,042
40-44	90	4,102	97	24	4,313
45-49	54	3,060	115	50	3,279
50-54	26	1,890	53	40	2,009
55-59	17	1,217	41	39	1,314
60+	25	800	28	62	915
Total	**18,974**	**33,480**	**995**	**313**	**53,762**
Females					
<20	6,381	365	53	5	6,804
20-24	6,305	1,569	258	17	8,149
25-29	1,862	2,046	255	41	4,204
30-34	448	1,685	237	54	2,424
35-39	172	1,230	159	51	1,612
40-44	48	619	80	80	827
45-49	25	327	59	61	472
50-54	14	123	25	44	206
55-59	12	59	7	21	99
60+	9	29	6	24	66
Total	**15,276**	**8,052**	**1,139**	**398**	**24,863**

Source: Census 1995

Table D-5: Age specific annuity factors for ascertaining the capital value of pensions

Age	Mortality rate	Annuity factor assumed interest rate 0%	2%	4%	6%	8%
MALES						
15	0.001545	52.4819	31.9968	21.8609	16.2718	12.8879
16	0.001620	51.5615	31.6657	21.7289	16.2132	12.8588
17	0.001695	50.6436	31.3297	21.5930	16.1521	12.8282
18	0.001775	49.7279	30.9889	21.4531	16.0885	12.7962
19	0.001860	48.8145	30.6430	21.3091	16.0223	12.7625
20	0.001935	47.9036	30.2922	21.1608	15.9533	12.7272
21	0.002010	46.9945	29.9360	21.0079	15.8812	12.6899
22	0.002085	46.0872	29.5742	20.8501	15.8059	12.6506
23	0.002155	45.1814	29.2065	20.6872	15.7270	12.6089
24	0.002230	44.2768	28.8328	20.5189	15.6443	12.5647
25	0.002305	43.3735	28.4529	20.3450	15.5577	12.5178
26	0.002390	42.4714	28.0667	20.1653	15.4668	12.4679
27	0.002485	41.5708	27.6741	19.9797	15.3716	12.4150
28	0.002590	40.6718	27.2754	19.7881	15.2718	12.3590
29	0.002710	39.7749	26.8705	19.5903	15.1674	12.2995
30	0.002840	38.8802	26.4596	19.3865	15.0582	12.2367
31	0.002995	37.9881	26.0428	19.1764	14.9442	12.1702
32	0.003160	37.0992	25.6204	18.9602	14.8252	12.1000
33	0.003350	36.2137	25.1924	18.7378	14.7012	12.0260
34	0.003565	35.3320	24.7592	18.5094	14.5721	11.9481
35	0.003800	34.4549	24.3211	18.2749	14.4379	11.8663
36	0.004065	33.5825	23.8782	18.0344	14.2985	11.7803
37	0.004355	32.7155	23.4310	17.7881	14.1539	11.6903
38	0.004675	31.8542	22.9797	17.5360	14.0042	11.5960
39	0.005025	30.9991	22.5246	17.2782	13.8492	11.4974
40	0.005420	30.1506	22.0660	17.0148	13.6889	11.3945
41	0.005840	29.3095	21.6044	16.7462	13.5235	11.2872
42	0.006305	28.4758	21.1400	16.4722	13.3529	11.1755
43	0.006815	27.6501	20.6731	16.1932	13.1772	11.0592
44	0.007365	26.8330	20.2043	15.9094	12.9964	10.9385
45	0.007970	26.0246	19.7337	15.6208	12.8105	10.8132
46	0.008625	25.2257	19.2619	15.3278	12.6197	10.6834
47	0.009335	24.4364	18.7892	15.0306	12.4241	10.5491
48	0.010115	23.6573	18.3159	14.7293	12.2236	10.4102
49	0.010955	22.8888	17.8427	14.4243	12.0186	10.2669
50	0.011870	22.1313	17.3699	14.1160	11.8091	10.1191
51	0.012865	21.3851	16.8978	13.8045	11.5953	9.9669
52	0.013940	20.6508	16.4271	13.4902	11.3774	9.8105
53	0.015105	19.9286	15.9581	13.1734	11.1555	9.6498
54	0.016370	19.2189	15.4913	12.8545	10.9299	9.4851
55	0.017740	18.5221	15.0271	12.5339	10.7009	9.3164
56	0.019220	17.8385	14.5661	12.2119	10.4687	9.1439
57	0.020830	17.1685	14.1085	11.8889	10.2335	8.9678
58	0.022565	16.5125	13.6552	11.5653	9.9957	8.7883
59	0.024450	15.8706	13.2063	11.2416	9.7556	8.6056
60	0.026480	15.2433	12.7624	10.9182	9.5135	8.4199
61	0.028680	14.6307	12.3240	10.5955	9.2698	8.2314
62	0.031060	14.0332	11.8915	10.2740	9.0248	8.0405
63	0.033625	13.4510	11.4655	9.9541	8.7790	7.8475
64	0.036400	12.8842	11.0462	9.6363	8.5326	7.6526
65	0.039390	12.3331	10.6342	9.3211	8.2862	7.4563

Source of mortality rates: UN-model with South Asian mortality pattern and life expectancy of 51.0 for males and 55.0 for females

Age	Mortality rate	Annuity factor assumed interest rate 0%	2%	4%	6%	8%
FEMALES						
15	0.001350	55.0290	32.9279	22.2296	16.4302	12.9617
16	0.001460	54.1021	32.6105	22.1087	16.3781	12.9361
17	0.001580	53.1797	32.2899	21.9851	16.3247	12.9099
18	0.001705	52.2623	31.9662	21.8591	16.2699	12.8830
19	0.001830	51.3498	31.6395	21.7305	16.2137	12.8556
20	0.001935	50.4422	31.3095	21.5992	16.1561	12.8275
21	0.002040	49.5380	30.9757	21.4647	16.0966	12.7984
22	0.002120	48.6372	30.6377	21.3268	16.0351	12.7684
23	0.002195	47.7384	30.2947	21.1848	15.9711	12.7368
24	0.002255	46.8413	29.9463	21.0384	15.9042	12.7037
25	0.002310	45.9449	29.5919	20.8870	15.8342	12.6685
26	0.002355	45.0489	29.2313	20.7304	15.7607	12.6312
27	0.002400	44.1529	28.8639	20.5680	15.6832	12.5913
28	0.002440	43.2567	28.4896	20.3997	15.6017	12.5488
29	0.002480	42.3601	28.1079	20.2250	15.5156	12.5032
30	0.002530	41.4629	27.7188	20.0438	15.4248	12.4543
31	0.002590	40.5655	27.3223	19.8557	15.3291	12.4020
32	0.002650	39.6683	26.9185	19.6609	15.2283	12.3462
33	0.002730	38.7710	26.5071	19.4589	15.1220	12.2864
34	0.002825	37.8744	26.0885	19.2498	15.0103	12.2227
35	0.002935	36.9789	25.6627	19.0336	14.8930	12.1548
36	0.003065	36.0848	25.2301	18.8101	14.7700	12.0827
37	0.003220	35.1927	24.7906	18.5795	14.6410	12.0061
38	0.003400	34.3031	24.3448	18.3417	14.5062	11.9250
39	0.003600	33.4167	23.8930	18.0969	14.3654	11.8392
40	0.003835	32.5339	23.4352	17.8450	14.2185	11.7487
41	0.004100	31.6553	22.9720	17.5863	14.0656	11.6533
42	0.004395	30.7815	22.5037	17.3207	13.9065	11.5529
43	0.004725	29.9129	22.0306	17.0485	13.7413	11.4474
44	0.005100	29.0502	21.5531	16.7697	13.5699	11.3368
45	0.005515	28.1940	21.0716	16.4845	13.3924	11.2210
46	0.005975	27.3448	20.5865	16.1932	13.2088	11.0999
47	0.006485	26.5031	20.0984	15.8959	13.0191	10.9734
48	0.007050	25.6696	19.6075	15.5929	12.8234	10.8416
49	0.007675	24.8448	19.1144	15.2843	12.6218	10.7044
50	0.008360	24.0292	18.6196	14.9706	12.4144	10.5618
51	0.009115	23.2233	18.1235	14.6519	12.2013	10.4138
52	0.009950	22.4278	17.6266	14.3286	11.9826	10.2604
53	0.010865	21.6431	17.1296	14.0011	11.7585	10.1018
54	0.011870	20.8699	16.6329	13.6696	11.5293	9.9379
55	0.012975	20.1085	16.1371	13.3347	11.2952	9.7689
56	0.014180	19.3597	15.6428	12.9967	11.0563	9.5949
57	0.015505	18.6238	15.1505	12.6560	10.8130	9.4160
58	0.016955	17.9014	14.6608	12.3132	10.5656	9.2324
59	0.018540	17.1929	14.1744	11.9687	10.3145	9.0444
60	0.020275	16.4988	13.6917	11.6229	10.0598	8.8521
61	0.022170	15.8195	13.2135	11.2764	9.8022	8.6557
62	0.024245	15.1555	12.7402	10.9298	9.5418	8.4556
63	0.026505	14.5072	12.2725	10.5836	9.2793	8.2522
64	0.028975	13.8750	11.8110	10.2383	9.0150	8.0456
65	0.031670	13.2592	11.3563	9.8945	8.7494	7.8363

Table D-6: Female population and female employees in private and public sector by age and number of children, 1995

Age	Number of females aged 15-49	Number of children living: 0	1	2	3	4	5	6	7	8	9	10+	total	Total number of children	Average number of children
Total population															
15-19	**231,710**	90.73%	7.47%	1.54%	0.21%	0.04%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	**26,812**	**0.12**
20-24	**194,940**	46.03%	26.26%	18.64%	6.99%	1.65%	0.30%	0.08%	0.03%	0.01%	0.00%	0.00%	100.00%	**183,564**	**0.94**
25-29	**179,871**	18.69%	17.62%	24.24%	20.81%	11.92%	4.76%	1.43%	0.34%	0.09%	0.02%	0.10%	100.00%	**383,111**	**2.13**
30-34	**144,249**	10.37%	9.11%	15.91%	20.35%	19.36%	13.67%	7.13%	2.74%	0.92%	0.23%	0.21%	100.00%	**463,918**	**3.22**
35-39	**132,146**	7.93%	6.53%	10.49%	14.61%	17.49%	16.78%	12.88%	7.57%	3.64%	1.27%	0.81%	100.00%	**535,139**	**4.05**
40-44	**91,193**	8.60%	6.97%	9.18%	11.91%	14.20%	14.88%	13.24%	9.75%	6.08%	2.92%	2.29%	100.00%	**400,924**	**4.40**
45-49	**80,479**	9.66%	8.29%	9.99%	11.68%	13.37%	13.24%	11.97%	8.93%	6.13%	3.51%	3.22%	100.00%	**348,436**	**4.33**
15-49	**1,054,588**	**35.50%**	**12.80%**	**12.97%**	**11.42%**	**9.44%**	**7.14%**	**4.91%**	**2.91%**	**1.60%**	**0.71%**	**0.61%**	**100.00%**	**2,341,904**	**2.22**
Employees in private sector															
15-19	**6,478**	97.85%	1.88%	0.26%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	**156**	**0.02**
20-24	**8,149**	87.43%	8.41%	3.17%	0.70%	0.25%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	100.00%	**1,475**	**0.18**
25-29	**4,204**	54.97%	18.15%	15.49%	7.33%	2.81%	0.86%	0.21%	0.14%	0.00%	0.00%	0.05%	100.00%	**3,759**	**0.89**
30-34	**2,424**	24.46%	15.72%	23.97%	18.85%	9.57%	4.54%	1.82%	0.62%	0.33%	0.04%	0.08%	100.00%	**4,856**	**2.00**
35-39	**1,612**	14.39%	10.48%	18.49%	18.36%	16.44%	10.86%	6.27%	2.85%	1.24%	0.50%	0.12%	100.00%	**4,770**	**2.96**
40-44	**827**	11.12%	6.29%	11.61%	16.69%	16.69%	16.20%	10.16%	6.29%	2.06%	1.93%	0.97%	100.00%	**3,116**	**3.77**
45-49	**470**	15.11%	7.66%	11.70%	11.49%	14.26%	12.98%	9.15%	8.51%	4.26%	2.55%	2.34%	100.00%	**1,808**	**3.85**
15-49	**24,164**	**69.37%**	**9.14%**	**8.09%**	**5.42%**	**3.48%**	**2.14%**	**1.17%**	**0.66%**	**0.27%**	**0.15%**	**0.10%**	**100.00%**	**19,940**	**0.83**
Employees in public sector															
15-19	**1,114**	93.72%	5.75%	0.54%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	**76**	**0.07**
20-24	**7,111**	64.83%	22.80%	9.82%	2.21%	0.27%	0.07%	0.00%	0.01%	0.00%	0.00%	0.00%	100.00%	**3,673**	**0.52**
25-29	**11,361**	34.90%	24.73%	24.14%	11.61%	3.30%	0.92%	0.21%	0.05%	0.00%	0.00%	0.12%	100.00%	**14,618**	**1.29**
30-34	**7,668**	17.64%	13.33%	24.87%	21.78%	13.62%	6.13%	1.77%	0.56%	0.13%	0.07%	0.10%	100.00%	**17,702**	**2.31**
35-39	**4,566**	11.65%	6.90%	17.52%	20.76%	18.92%	13.03%	6.35%	2.89%	1.34%	0.33%	0.31%	100.00%	**14,631**	**3.20**
40-44	**1,890**	8.62%	5.77%	10.37%	16.93%	19.63%	14.92%	11.27%	6.61%	3.23%	1.43%	1.22%	100.00%	**7,492**	**3.96**
45-49	**1,002**	9.78%	5.29%	10.98%	11.98%	15.47%	13.77%	13.67%	7.78%	6.99%	1.90%	2.40%	100.00%	**4,306**	**4.30**
15-49	**34,712**	**33.87%**	**17.27%**	**18.61%**	**13.06%**	**8.15%**	**4.59%**	**2.30%**	**1.11%**	**0.58%**	**0.19%**	**0.26%**	**100.00%**	**62,498**	**1.80**

Source: Census 1995

Supplement : Impacts of recent economic developments in Lao PDR

1. Introduction

The purpose of this addendum is to supplement the report by taking into consideration changes in the general economic context of Lao PDR in the first three quarters of 1998. The results of the actuarial valuation presented in this report are based on the data which were collected in 1997, when growth perspectives for Southeast Asia and Lao PDR in particular were still favourable. However, effects of the recent drastic changes in the economy on the national living standards are obvious.

In general, actuarial valuations attempt to consider the long-term financial development of social security schemes. It is generally acknowledged that short-term economic developments do not have significant impact on the results of certain long-term projections (such as the future population and its age structure, labour supply, and the potential of production). However, and theoretical considerations aside, experience has shown in many countries that no social security system can avoid the drastic impacts of heavy economic turmoil accompanied by hyperinflation[1] as is presently the case in Lao PDR.

Based on these considerations, this supplement discusses the calculations that reflect the most recent macro-economic developments and their implications on the quantitative evaluation of the social security schemes of Lao PDR. It focuses especially on those financial aspects of social security that are specifically related to developments resulting from the recent economic crisis. It might be helpful to compare the results of the main body of the report with those presented here. Hyperinflation changes the basic financial parameters drastically. Once the inflationary period is over, social policy planners normally realise that what was previously regarded reasonable may subsequently have to be changed significantly.

2. Recent economic developments, change in medium-term expectations and the labour market

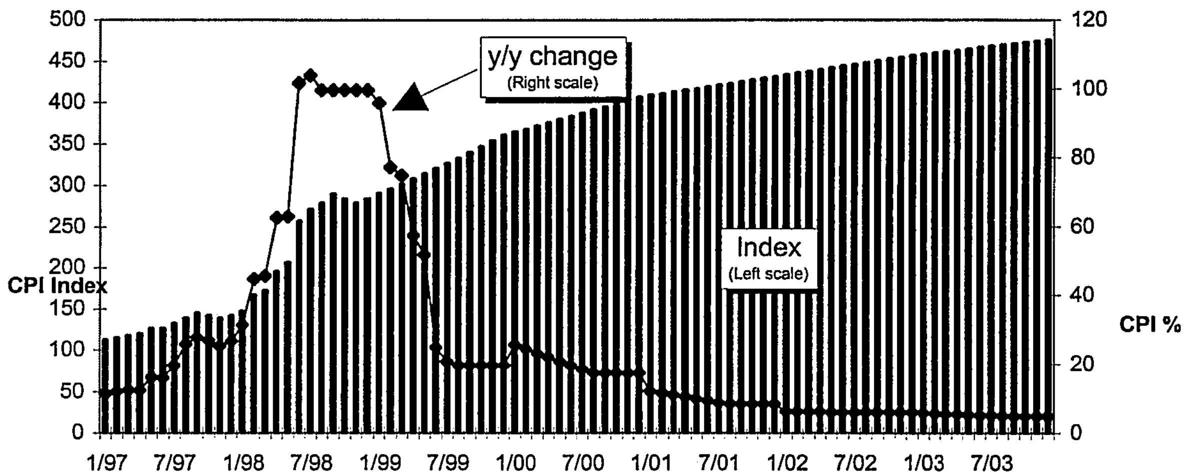
Prices

The most obvious indicator illustrating the present fast deterioration of the economic performance of Lao PDR is the inflation rate (Figure 1). According to the latest available information, the annual inflation rate had reached a level of slightly over 100% by mid-1998, i.e. the average level of prices of goods and services as measured by the Price Index (PI) are now twice as high as those in mid-1997. This development was paralleled and, in fact, triggered off by a significant deterioration of the exchange rate of Kip against Thai Baht, since the majority of Lao PDR imports (around 60%) originate from Thailand. As the economy of Lao PDR is not directly "linked" to the US$ trading

[1] It is broadly accepted that inflation turns into hyper inflation when annual rates of increase of PI exceed 50%.

sphere, the Baht trading zone has functioned as a buffer and inflation has been preserved from rocketing to the extremely high levels that could have been expected if the import bills of Lao PDR had been predominantly invoiced in US$.

Figure S1: Monthly PI Development from January 1997 to December 2003



Even if the inflation rate stabilises for the last quarter of 1998, the average PI of 1998 will reach a level of around 236 (as opposed to the last year's average of 131), which is equivalent to an inflation rate of more than 80%. If the assumed month-to-month inflation rates are 2% in 1999, 1% in 2000 and 0.5% in 2001, the annual average inflation rate will still be relatively high at 37% in 1999, only later decreasing to 19% in 2000 and to a single digit rate of 9% in 2001. Therefore, even if the government implements a successful stabilisation measure, it will still be confronted with the echoes of the present high inflation for at least three years to come.

Wages

Under these conditions, the short-term relation between price development and wage development needs to be carefully addressed. One important characteristic of hyperinflation is that wage-price elasticities which were observed in the past stable growth period become no longer valid. In order to maintain the minimum purchasing power of wage earners and their families, measures need to be taken to adjust wages to inflation development.

From a social security point of view, at least two aspects of such inflation related wage adjustments are important. First, there is an unavoidable time difference between short-term price development (taking the lead) and possible wage adjustments (lagging behind). This is due to the fact that wages can be adjusted only after the information on price increases is available to decision makers. Second, if inflation is higher and the resulting financial problems of the economy worsen, the more flat-rate elements will be attributed to workers wage. This contributes to a levelling out of incomes for the broad majority of the population. The unavoidable time-lag between price increases and wage adjustments adds to a fast deterioration of real wages during such high inflationary periods.

Real wage deterioration is predominantly influenced by currency devaluation, which is presently the case in Lao PDR. One probable implication of the exchange rate deterioration is a significant decline in the country's real Terms of Trade (ToT) which can be interpreted two ways: *either*, a ToT reduction means that for each unit of goods and services exported to Lao PDR the trading partners now expect more units of goods and services to be received in return from Lao PDR; *or* for each unit of goods and services imported from Lao PDR the trading partners are now ready to pay only a significantly reduced amount in return. Under the first perspective, the additional goods and services to be exported in return for imports are no longer available for national distribution - real income has to adjust accordingly for as long as balance of payment constraints prevail. Under the second perspective, the return on each exported unit declines, i.e. less imported goods and services are available to private households; again, real income must adjust accordingly for as long as the shortages of goods and services stemming from reduced imports cannot be offset by increased national production. In considering the situation from this point of view it becomes clear that the present wave of inflation is just a reflection of an overly delayed adjustment of national monetary aggregates and price relations to sudden new conditions in the trade of goods and services between Lao PDR and its main trading partners[2].

As only limited statistics are available concerning recent wage developments, the wage-price elasticity assumptions are based on the experience of other countries that have undergone similar developments (especially countries in transition in Eastern Europe). In Hungary, at the height of inflation in 1991, the wage-PI elasticity was 0.73, in Poland - it was 0.71 in 1990. In subsequent years elasticities recovered to levels around 0.9 and over. Bulgaria experienced a different situation. In 1994, elasticity deteriorated to 0.54 whereas in 1997, although annual inflation was ten times higher than in 1994, elasticity averaged 0.80 (influenced by the stabilising effects of a Currency Board Arrangement)[3].

Based on these experiences, wage-price elasticity for Lao PDR is assumed to be 0.75 in 1998, 0.80 in 1999, and 0.90 in 2000. In 2001, elasticity is assumed to be 1.10; thereafter it is assumed that it will gradually increase to a level of 1.50 by 2004.

Table S1 shows the results of average wage developments until 2005.

[2] It should be noted that the official Laotian projection for 1998, measured in US$, implies a real GDP reduction of about 55% in comparison to 1997.
[3] For Hungary and Poland see: M. Cichon (Ed.): Social Protection in the Visegrád Countries: Four Country Profiles, ILO-CEET Report No. 13, Table annex; for Bulgaria see: ILO-SECFAS calculations.

Table S1: Nominal and real average wage development 1996 to 2005

Year	Wages *)		CPI	Wage-price-elasticity	Real wages *)	
	Kip / mth	% **)			1996 = 100	% **)
1996	45,590		-	-	100.0	-
1997	54,070	18.6	16.9	-	101.4	1.4
			- Projection -			
1998	86,980	60.9	81.2	0.75	90.1	-11.2
1999	112,932	29.8	37.3	0.80	85.2	-5.4
2000	131,989	16.9	18.7	0.90	83.8	-1.6
2001	145,139	10.0	9.1	1.10	84.5	0.8
2002	156,450	7.8	6.0	1.30	86.0	1.7
2003	167,384	7.0	5.0	1.40	87.6	1.9
2004	179,917	7.5	5.0	1.50	89.7	2.4
2005	193,389	7.5	5.0	1.50	91.8	2.3

*) 1996, 1997: Own estimates.
**) Per cent change over previous year.

3. Macroeconomic assumptions

On the basis of the analysis made so far, revised macroeconomic assumptions are explained in this section. Attention should be paid to the fact that these assumptions, as well as the resulting projections, rely on the very limited information available at October 1998. These results should therefore be regarded as preliminary, and should not be taken to be definitive.

Real GDP growth

Real GDP growth rates have been taken to be 1.0% each in 1998 and 1999, 3.0% in 2000, 5.0% in 2001 and 6.0% in 2002 and after. These assumptions do not allow for negative GDP growth rates in contrast to many other economies of the region. As indicated in Figure 2, the assumptions reflect the view that the country has the political and economic capacity to "switch back" to a higher growth trajectory within 2 to 3 years. These assumptions therefore represent a temporary and moderate crisis perspective for Lao PDR.

Pre-crisis projections of the Lao PDR Government expected real GDP growth of about 8% for the years 1997-2000. Meanwhile, GDP growth for 1997 has been estimated at 6.9% (6.0% according to the Economic Intelligence Unit (EIU)[4]) and medium-term expectations have been reduced to 6.7% in 1998 and 7% each in 1999 and 2000[5].

In 1998, the EIU expects a reduction in the country's growth rate from 3% to 4%. In 1999, "GDP growth is likely to pick up only slightly."[6] This view, however, is considered to be too optimistic. International experience shows that inflationary shocks are regularly accompanied by serious distortions of real GDP growth; economic turmoil

[4] EIU: Country report Laos 3rd quarter 1998
[5] Latest available projection of the National Statistical Centre of Lao PDR.
[6] EIU: Country report Laos 3rd quarter 1998

prevails as long as inflationary expectations cannot be curbed or - in exceptional cases - the expectations of economic actors have not fully adapted to the new inflationary environment.

Furthermore, the following reasons can be enumerated as to why we estimate very low GDP growth of around 1% in 1998 and 1999[7], a slow picking up in 2000 and full recovery only later.

First, the Southeast Asian region as a whole is presently on a pronounced negative or at least declining growth path. The crisis will last longer (probably until 1999/2000) than initially expected by most observers. There is no positive evidence that the Lao economy could remain unaffected by these developments. Despite theoretical trade advantages, induced by the comparatively faster exchange rate decline, the Lao economy will not be able to counter the overall trend immediately.

Second, the declining real income of private households will contribute to a reduction in production especially, inter alia, in the construction and wholesale & retail sectors as the real income of private households will decline and private savings will not be sufficient to counterbalance the losses.

Third, imports might slacken or even decline, due to the weak Kip. Statistically, this may at first contribute to a less negative real trade balance (positive "swing" on measured GDP) but, given that the country will have to rely at least for some years on imports in terms of investment goods (the country's development strategy particularly depends on the foreign investments) in order to prepare the capital basis for sustained economic growth, reduced imports might have second round negative growth effects.

Fourth, a majority of the country's production is attributed to agriculture. At a first glance this could be an advantage as the agricultural sector might not be as seriously affected by the negative economic trends as other sectors. But, a clear disadvantage is that the agricultural sector lacks flexibility in its productivity. In other words, agricultural sector production might well expand on a continuous and stable growth path but this might not be sufficient to counterbalance significant negative developments in other sectors in the short-term. Furthermore, it should be noted that agricultural production might be affected by the negative exchange rate (import cost of fertilisers etc.) and suffer accordingly, even if agriculture dependency were lower.

Fifth, it is acknowledged that the Lao economy is not as deeply integrated in the world economy as other economies of the region, inter alia because of the high proportion of agricultural production which predominantly serves the food supply for the nation. This is why there is a possibility that the short-term development of the real GDP (and employment) in Lao PDR will not be as severely affected by the Asian crisis as the other economies of the region.

[7] Indeed, it cannot be excluded that the expected very low (or even negative) GDP growth will not occur in 1998 but only later, i.e. in 1999 and after. It is difficult to divide up the effects of economic crisis developments correctly into periods, especially as long as the crisis is not over. For the purposes of this supplement, however, this issue is of minor importance.

Figure S2: Real GDP Growth - Moderate Crisis Scenario 1998 to 2002

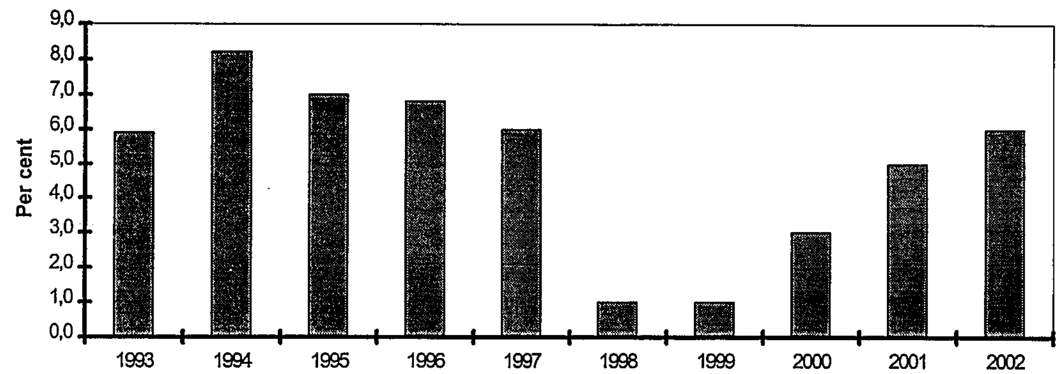


Table S2: Real GDP 1998 - Comparison of Laotian Government and ILO Estimates

Sectors	1997	1998				1997 / 98	
	Constant prices						
	Million Kip			Structure %		Change %	
	Government		ILO*)	Government	ILO*)	Government	ILO*)
Agriculture	498,683	521,498	515,376	51.2	53.4	4.6	3.3
Crops	253,419	274,573	271,159	26.9	28.1	8.3	7.0
Livestock & Fishery	188,325	192,972	192,972	18.9	20.0	2.5	2.5
Forestry	56,939	53,953	51,245	5.3	5.3	-5.2	-10.0
Industry	198,848	217,026	195,495	21.3	20.3	9.1	-1.7
Mining & Quarrying	3,566	6,599	3,477	0.6	0.4	85.0	-2.5
Manufacturing	150,027	166,379	150,027	16.3	15.6	10.9	0.0
Construction	32,646	30,051	29,381	2.9	3.0	-7.9	-10.0
Electricity	12,609	13,997	12,609	1.4	1.3	11.0	0.0
Services	238,300	265,686	239,034	26.1	24.8	11.5	0.3
Transport & Communication	52,937	56,842	54,260	5.6	5.6	7.4	2.5
Wholesale & Retail Trade	85,050	99,380	85,050	9.8	8.8	16.8	0.0
Banking	12,765	14,053	13,084	1.4	1.4	10.1	2.5
Ownership & Dwelling	30,887	29,660	29,660	2.9	3.1	-4.0	-4.0
Public Administration	28,040	29,314	28,320	2.9	2.9	4.5	1.0
Nonprofit Institutions	10,535	17,358	10,535	1.7	1.1	64.8	0.0
Hotels & Restaurants	16,543	17,459	16,543	1.7	1.7	5.5	0.0
Other Services	1,544	1,621	1,583	0.2	0.2	4.9	2.5
Import Duties	19,182	14,809	14,809	1.5	1.5	-22.8	-22.8
GDP at market prices	955,013	1,019,019	964,713	100.0	100.0	6.7	1.0

*) ILO Social Security Department estimate September

The differences in the two assumptions for the year 1998 are presented in Table S2, which shows the expected production decline in the construction sector according to the Government projections. The ILO, however, expects it to be more pronounced - with moreover a subsequent negative impact on the forestry sector. We also anticipate that the output of the mining & quarrying sector will be dragged down by decreasing construction activities. We would expect stagnation in the manufacturing sector; under the prevailing conditions an assumed growth rate by the Government of around 11% is unlikely to be achieved. The same holds true for the electricity production. Given the expected drastic reduction in the real income of private households, we consider that an increase of about 17% of the wholesale & retail sector, as estimated in the Government projections, appears to be unrealistic.

Labour market

Under the given economic assumptions the labour market development of Lao PDR has been projected. Table S3 presents the country's labour market balance under a temporary and moderate crisis perspective.

Due to its young population structure, the Lao PDR labour market has to absorb over the foreseeable future an additional 70,000 to 80,000 workers each year in order to keep unemployment rates at low pre-crisis levels. In terms of this continuous pressure on the supply side of the labour market, Lao PDR is in the same position as other countries of the region, e.g., Thailand and Indonesia (albeit to a different order of magnitude). Therefore, as in these countries, any stagnation, or the slightest reduction, in employment levels will immediately and significantly cause unemployment to rise.

With respect to employment, it has been assumed that the total number of employed will decrease in 1998 by 5,000 persons (-0.2%), and in 1999 by 10,000 persons (-0.4%), in 2000 it should start to increase again (+ 35,000 persons, +1.6%).

After successfully maintaining unemployment levels of below 100,000 in the past years, the number of unemployed will increase to 175,000 in 1998, 270,000 in 1999 and over 300,000 in the years 2000 and later. The unemployment rate, which was at a level of below 4% in 1997, will increase to over 7% in 1998 and over 10% in 1999. In 2001 and after, it has been assumed that the real GDP growth would be sufficient for the labour market to absorb the additional supply of labour force, i.e. employment is assumed to grow by about 75,000 persons (around +5.5%) per year. As a result, unemployment is estimated to remain at slightly growing double digit levels in 2000 and later. In order to reduce unemployment to pre-crisis levels by 2005 (below 4% of the labour force) the Laotian economy would have to produce workplaces of at least 135,000 per year - which is about 2.5 times as many as were achieved before the crisis under the favourable economic growth conditions prevailing the country and the region at that time.

It should be noted that given the country's predominant reliance of employment on agriculture, it could be anticipated that the agriculture sector would absorb a certain percentage of unemployed from other sectors.

It should also be noted that even if one regards these calculations as the most pessimistic, the Laotian Government should be aware that the basis for the envisaged implementation of the social security legislation might undergo fundamental changes once the present crisis is over.

Table S3: Labour Market Balance - Moderate Crisis Scenario

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
	Thousand persons*)										
(A) Total population	4575	4680	4787	4896	5007	5121	5243	5366	5488	5611	5733
(B) Population 10 and over	3157	3264	3373	3484	3596	3708	3813	3917	4022	4126	4231
(C) Labour force	2222	2289	2360	2438	2525	2612	2704	2798	2892	2988	3084
(D) Employed	2166	2219	2268	2263	2253	2288	2423	2559	2694	2829	2964
agriculture	1853	1890	1927	1927	1927	1957	2079	2201	2323	2445	2567
% of empl.	85,5	85,2	85,0	85,1	85,5	85,5	85,8	86,0	86,2	86,4	86,6
non-agriculture	313	328	341	336	326	331	344	358	371	384	397
% of empl.	14,5	14,8	15,0	14,9	14,5	14,5	14,2	14,0	13,8	13,6	13,4
(E) Unemployed	56	70	91	175	271	323	281	239	198	159	120
(F) Paricipation rate %	70,4	70,1	70,0	70,0	70,2	70,4	70,9	71,4	71,9	72,4	72,9
(G) Unemployment rate %	2,5	3,1	3,9	7,2	10,7	12,4	10,4	8,5	6,9	5,3	3,9
Covered population											
Private sector workers	-	-	-	-	81	84	91	98	105	112	119
% of non-agr. empl.					24,9	25,5	26,5	27,5	28,4	29,2	30,0
Civil servants	70	70	70	67	63	63	63	63	64	64	63
% of non-agr. empl.	22,4	21,3	20,5	20,0	19,5	18,9	18,3	17,7	17,2	16,6	15,9

*) If not otherwise indicated.

4. Short-term impacts of the recent economic development

Table S4 compares the main projection results under the base case assumption and the above-explained assumption (called Crisis assumption). In this supplement, only the planned pension scheme for private sector employees is considered. The following observations can be made:

- Due to the extremely high inflation for the period 1998-2000, the Crisis assumption results in much higher rates than those under the base case assumption. The price index will be higher by 60% in 1998, 90% in 1999, and 100% in 2000 and thereafter.

- Unlike the base case assumption, the average wage is not expected to fully catch up with inflation as under the crisis assumption. Therefore, the average insurable earnings net of inflation would decrease by 11% in 1998, 17% in 1999, and about 20% in and after 2000.

- Even if the covered population decreases slightly, the number of pensioners subsequently reaching retirement age will decrease accordingly, as long as retirement behaviour remains unchanged. Thus, the demographic dependency rates would remain almost the same. In addition, as pensions are adjusted in line with average wage development[8], the ratio of the average pension in terms of the average insurable

[8] The draft Decree states that the rate of adjustment of pension which is effective as of the beginning of a year is the rate of increase in the average insurable earnings of the previous year (over the average of two years before). In the actuarial projection, however, it has been assumed that the assumed increase rate of the average insurable earnings in a year is applied to the same year. (also see the concluding remark).

Table S4: Comparison of the projection results under two assumptions, 1997-2005

	1997	1998	1999	2000	2001	2002	2003	2004	2005
Rates of inflation									
Crisis	16.9%	81.2%	37.3%	18.7%	9.1%	6.0%	5.0%	5.0%	5.0%
Base	16.9%	15.0%	15.0%	10.0%	9.0%	8.0%	7.0%	6.0%	5.0%
Price Index (1996=100)									
Crisis	116.9	211.8	290.8	345.2	376.6	399.2	419.2	440.2	462.2
Base	116.9	134.4	154.6	170.1	185.4	200.2	214.2	227.1	238.4
Crisis/base	1.00	1.58	1.88	2.03	2.03	1.99	1.96	1.94	1.94
Rate of increase in wage									
Crisis	18.6%	60.9%	29.8%	16.9%	10.0%	7.8%	7.0%	7.5%	7.5%
Base	18.6%	15.0%	15.8%	11.3%	10.6%	9.6%	8.6%	7.5%	6.5%
Average wage index (1996=100)									
Crisis	118.6	190.8	247.7	289.6	318.5	343.4	367.4	394.9	424.6
Base	118.6	136.4	157.9	175.8	194.4	213.1	231.4	248.8	264.9
Crisis/base	1.00	1.40	1.57	1.65	1.64	1.61	1.59	1.59	1.60
Average insurable earnings of the covered population (Kip/month)									
Crisis	-	-	113,000	132,000	145,000	156,000	167,000	180,000	193,000
Base	-	-	72,000	80,200	88,600	97,000	105,300	113,300	120,700
Crisis/base	-	-	1.57	1.65	1.64	1.61	1.59	1.59	1.60
Index of average insurable earnings net of inflation (1996=100)									
Crisis	101.5	90.1	85.2	83.8	84.4	85.7	87.3	89.6	91.5
Base	101.5	101.5	102.2	103.4	104.8	106.3	107.8	109.5	111.1
Crisis/base	1.00	0.89	0.83	0.81	0.80	0.81	0.81	0.82	0.82
Average pension amounts (Kip/month)									
Crisis	-	-	-	24,500	34,000	40,500	46,300	52,200	58,300
Base	-	-	-	15,300	21,300	25,700	29,700	33,400	36,800
Crisis/base				1.60	1.60	1.58	1.56	1.56	1.58
Index average pensions (1996=100)									
Crisis	118.6	190.8	247.7	289.3	401.5	478.3	546.8	616.5	688.5
Base	118.6	136.4	157.9	175.9	244.9	295.5	341.5	384.1	423.1
Crisis/base				1.64	1.64	1.62	1.60	1.61	1.63
Index of average pensions net of inflation (1996=100)									
Crisis	101.5	90.1	85.2	83.8	106.6	119.8	130.4	140.1	149.0
Base	101.5	101.5	102.2	103.4	132.1	147.6	159.4	169.1	177.5
Crisis/base	1.00	0.89	0.83	0.81	0.81	0.81	0.82	0.83	0.84
Average replacement rates									
Crisis	-	-	-	18.6%	23.4%	26.0%	27.7%	29.0%	30.2%
Base	-	-	-	19.1%	24.0%	26.5%	28.2%	29.5%	30.5%
Crisis/base				0.97	0.98	0.98	0.98	0.98	0.99
Total insurable earnings (in million Kip)									
Crisis	-	-	109,834	133,055	158,486	184,045	210,855	256,275	292,683
Base	-	-	77,047	90,814	106,768	124,152	142,816	172,370	194,234
Crisis/base			1.43	1.47	1.48	1.48	1.48	1.49	1.51
Total expenditure (in million Kip)									
Crisis	-	-	-	358	1,009	1,844	2,880	4,158	5,764
Base	-	-	-	226	643	1,190	1,879	2,706	3,713
Crisis/base				1.58	1.57	1.55	1.53	1.54	1.55
PAYG cost rate									
Crisis	-	-	0.0%	0.3%	0.6%	1.0%	1.4%	1.6%	2.0%
Base	-	-	0.0%	0.2%	0.6%	1.0%	1.3%	1.6%	1.9%
Crisis/base				1.08	1.06	1.05	1.04	1.03	1.03
The number of the employed in non-agriculture (in thousands)									
Crisis	341	336	326	331	344	358	371	384	397
Base	341	347	357	369	384	399	414	429	447
Crisis/base	1.00	0.97	0.91	0.90	0.90	0.90	0.90	0.89	0.89
Covered population									
Crisis	-	-	81,000	84,000	91,000	98,000	105,000	118,700	126,100
Base	-	-	89,100	94,300	100,400	106,600	113,000	126,800	134,100
Crisis/base			0.91	0.89	0.91	0.92	0.93	0.94	0.94
The number of pensioners									
Crisis	-	-	-	1,200	2,500	3,800	5,100	6,700	8,300
Base	-	-	-	1,200	2,500	3,900	5,200	6,800	8,400
Crisis/base				1.00	1.00	0.97	0.98	0.99	0.99

earnings will not change significantly. Therefore, from a point of view of the social security scheme, the impact on the overall PAYG cost rate is relatively small. Results show that the difference in PAYG cost rate would be less than 0.1 %-points.

- However, as a consequence of this decrease in the real wage, the average pension would lose a considerable amount of its purchasing power. Results show that the estimated loss of purchasing power of the average pension would be 11% in 1998, 17% in 1999, and about 20% in 2000 and after. This gives rise for concern that pensions may not provide adequate economic protection the pensioners, despite the fact that the actual number of pensioners would be relatively small in the early stages of implementation of the scheme.

5. Concluding remarks

By way of conclusion, we summarise below general points to which due consideration should be paid concerning the management of social security schemes in periods of very high inflation.

- As pensions in payment are adjusted in line with increases in the average insurable earnings of the previous year (compared to that of two years earlier), they will lose their purchasing power rapidly. In order to provide adequate economic protection to pensioners (the old, the invalid and survivors), appropriate measures should be taken to adjust benefit levels as promptly as possible.

- In the case of a scheme retaining reserves, if the inflation rate is higher than the nominal interest rate, the investment of reserves will fail to yield a positive real rate of return. The devaluation of the reserves will deteriorate the long-term financial equilibrium of the scheme.

- In other countries which have experienced hyperinflation (e.g. Brazil and Mexico), some employers intentionally fail to pay contributions since the amount of the contribution due (including penalty) would be rapidly devaluated (called the Tanzi-Olivera effect). This would negatively affect the collection rate of contributions.

- Furthermore, closure of enterprises and layoff of workers will lead to a decrease in the number of contributors, and thus in the contribution income. In addition, in the absence of any unemployment protection, the increase in unemployment may lead to a propensity of laid-off workers to claim invalidity pensions on grounds of disability to work. Further, with respect to health care and other benefits-in-kind, currency depreciation will increase the prices of imported drugs and other medical appliances, pushing up the expenditure as a result.

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