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International Labour Organization

PERKESO

Malaysia

Report to the Social Security Organization on the ninth actuarial valuation

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Regional Office for Asia and the Pacific
Social Security Organization, Malaysia
Korea Institute for Health and Social Affairs

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Acknowledgements

The Article 82 of the Employees' Social Security Actstipulates that a periodical actuarial review should be carried out at least at intervals of five years and at such times the Minister of the Human Resources may consider necessary and the report shall be submitted to the Minister.

The Social Security Organization (SOCSO) of Malaysia requested the International Labour Organization (ILO) to carry out the review and a Funds-in-Trust agreement was negotiated between the ILO and SOCSO for the provision of the actuarial services for carrying out the ninth actuarial valuation of the social security fund as of 31 December 2010.

For the purpose of executing the project, the ILO appointed Dr Sukmyung Yun and Dr Hwayeon Shin as actuarial consultants. Ms Haijin Yang and Ms Misun Choi participated in the project as a part of the Korea Institute for Health and Social Affairs (KIHASA) team. Dr Yun and Dr Shin had a pre-meeting at SOCSO headquarters from 27 February to 4 March 2011. They had discussions with SOCSO staff and consulted on the analysis of the statistical data required for the valuation. The draft report was presented to the SOCSO Board meeting on 12 January 2012 and has been adjusted to reflect as much as possible the comments received at the board meeting.

The generic pension projection model developed by the ILO's International Financial and Actuarial Service (ILO FACTS) was fine-tuned in line with the social security programmes of Malaysia and a preliminary projection was made using the modified projection model. The projection model for employment injury benefits is newly developed in the ninth valuation. The remaining period of the assignment was devoted to the preparation of this actuarial report.

The KIHASA team worked under the general and technical supervision of Mr Hiroshi Yamabana, the Officer in Charge of the ILO FACTS, and under the guidance of Mr Ong Kim Seng of SOCSO with the support of Ms Rakawin Leechanavanichpan and Ms Titika Luewiphan, programme officers of the ILO Regional Office for Asia and the Pacific.

The Regional Director of the ILO Regional Office for Asia and the Pacific thanks Mr K. Selvarajah, the chief executive of the SOCSO and Mr.Ong Seng Kim, Director for Planning and Research for the courtesy and cooperation extended to the consultants. Particular thanks go to Ms Nurul Husna Binti Ibrahim and Mr Mohd Arif Bin Aziz of SOCSO for their invaluable support for data collection.

Executive summary

This report presents the results of the ninth statutory actuarial valuation of the employees' Social Security Fund (SOCSO), as of 31 December 2010. The Employment Injury Benefits Branch and the Invalidity (and survivors') Benefits Branch have been valued independently. The description of the scheme's benefits and a summary of actuarial methodology used in this report are included in the appendices. The draft report was presented to the SOCSO Board meeting on 12 January 2012 and has been adjusted to reflect as much as possible the comments received at the Board meeting.

Employment Injury Benefits Branch

The overall financial situation of the Employment Injury Benefits Branch was sound on the valuation date. The cost of the scheme has been contained within the contribution rate since the eighth valuation. The technical and contingency reserves have been constituted at the required level. Substantial free reserves have continued to accumulate.

Since the Employment Injury Benefits Branch adopts a pre-funded system called the terminal funding financing method, its financial assessment substantially depends on a discount rate set as the future long-term average rate of return of the investment. That is used to calculate the present value of anticipated future benefits. More technical reserves would be needed in case of adopting a lower discount rate. Low investment returns are expected for the time being due to the present economic conditions which include near-zero interest rates. However, earlier assumptions on investment returns have been maintained in the present valuation considering the nature of discount rate as the long-term average of future investment return.

The Employment Injury Benefits Branch can be financed at a lower contribution rate than the present 1.25 per cent of insured salaries based on past benefit experiences. However, benefit expenditure has been increasing recently, despite the decrease in the number of accidents. This is due to the increase in the average payments, the main causes of which are increasing severity of occupational diseases and a rise in the number of commuting accidents. It is therefore recommended that the current contribution rate should be maintained but should be re-assessed at the next actuarial valuation, taking into account the changes of benefit expenditure.

In order to maintain the real value of the permanent disablement and dependents' benefits against price increases, these benefits need to be increased by 3.3 per cent for those awarded before 2008, by 3.7 per cent for those awarded in 2008, by 3.0 per cent for those awarded in 2009 and by 1.3 per cent for those awarded in 2010. There is a necessary financial provision to absorb the cost of this adjustment.

While the current contribution rate of 1.25 per cent for the Employment Injury Benefits Branch is sufficient, the contribution rate of the invalidity and survivors' benefits branch needs to be gradually increased over the long term. The transfer of free reserves of the employment injury benefit branch to the invalidity and survivors' benefits branch could be considered through the tripartite board decision.

An annual automatic indexation of benefits in line with price increases could be introduced to replace the present method of adjusting benefits at the time of and as the result of actuarial valuations.

Actuaries were requested to assess the assumed minimum daily wage of 10 Malaysian ringgit (MYR) for disablement benefits and dependents' benefits to be increased to MYR25 or 30. As the long-term financial effects are assessed substantial and as it is necessary to have more studies and consultations to determine a desirable level of the assumed minimum daily wage, it is recommended that this issue should be again reviewed in the next actuarial valuation.

Invalidity (and Survivors') Benefits Branch

As the Invalidity and Survivors' Benefits Branch uses a partially funded financing method, it is inevitable that the contribution rate must be gradually increased to meet increasing benefit expenditure. As current branch expenditure has already exceeded contributions, the contribution rate should be increased as soon as possible. It is recommended that the current contribution rate of 1 per cent should be increased to 1.5 per cent in 2012, with an additional contribution rate of 0.25 per cent each from employers and employees. Should the scheme adopt the scaled premium method of the increase of the contribution rate by 0.5 per cent with no decrease in the reserves, the contribution rate is expected to be again increased to 2.0 per cent in 2020.

The actuaries were requested to assess the feasibility of the monthly minimum pension increase from the current MYR250 to 475 in line with the planned minimum wage increase,[1] the retirement increase to 60 and the wage ceiling increase to MYR4,000 or 5,000 to align the current system with social and economic development trends in Malaysia. It is assessed that these changes would not have substantial financial impacts on the branch.

Based on the assumption that the future contribution rate increase is to be properly increased, it is recommended that invalidity and survivors' benefits be increased at the same rate as permanent disability and dependents' benefits of the Employment Injury Benefits Branch. An annual automatic indexation of benefits in line with price increases could be also introduced.

General recommendations

Since the statistical unit was established within the organization following the recommendation of the seventh valuation report, statistics necessary for actuarial valuations have been greatly improved. This unit should continue to strengthen to improve the financial governance of the scheme based on quantitative information.

As the scheme is to go through gradual reforms in order to adapt to changing social and economic environment and at the same time to maintain its long-term financial sustainability, it is essential to have wider support for future reforms through information sharing and disclosure in publications such as periodical SOCSO reports.

As mentioned already in the previous section, the transfer of free reserves of the Employment Injury Benefit Branch to the Invalidity and Survivors' Benefits Branch could be considered through the tripartite Board decision in order to ameliorate the financing situation of the Invalidity and Survivors' Benefits Branch. However, it should be noted that this is a one-time temporary and not permanent solution and that the contribution rate increase in the Invalidity and Survivors' Benefits Branch should be again considered soon.

[1] It was planned that the monthly minimum wage would be set at 900 ringgit in January 2012, but had been assumed 950 ringgit during the course of the projection based on discussions with SOCSO staff. Based on the current pension provision of at least 50 per cent of the wage to be paid, the monthly minimum pension was set at 475 ringgit for the calculation.

The investment portfolio of the social security fund has concentrated on lower-risk and lower-return investments such as government bonds, government-guaranteed securities and the money market. Taking into account the fact that total contribution income still exceeds total expenditure and that most of the funds could be invested in the long-term assets, a study is recommended on the introduction of a strategy to invest in the longer-term assets and of a specialized fund management system which could enhance the long-term return on investment .[2]

As the SOCSO scheme matures in line with the history of the scheme and the ageing of the general population and the benefit expenditure steadily increase in line with the maturity of the scheme, it is important that a better strategy of the investment of reserves for each future year, which include setting an optimal investment portfolio by talking into account the future cash flow requirements for expenditure. An Asset-Liability Management (ALM) study needs to be carried out in the next actuarial valuation based on the future estimate of the expenditure. Actuaries and investments experts are expected to work together in the next valuation.

Other issues

The benefit level of the monthly constant attendance allowance needs to be increased to MYR500 for partially disabled beneficiaries so that they could afford to hire a caretaker where necessary out of the benefits.

Two questions are raised over the possible relaxation of qualifying conditions for invalidity pensions. Currently these conditions are a minimum 24 months contributions out of the last 40 months or contributions for at least two-thirds of the period since entry or one-third of the past period. Slight relaxations, such as providing lower benefits to those missing a month or two to satisfy 24 months contribution requirements or to relax the two-thirds conditions to three-fifths, are not considered to have a major impact on financing as possible benefit abuses are contained by strict controls on invalidity conditions themselves and by relatively good contribution compliances of employers and employees.

However, it should be noted that a relaxation of the requirements would not solve all complaints. The members would very likely request another relaxation even after these were made. Good compliance on contributions is essential to keep the current contributory scheme sustainable. These issues should be further discussed and carefully planned before carrying out any relaxation of the qualifying conditions.

In light of international comparisons and cost-benefit analysis of setting up rehabilitation centres, it is recommended that such centres should be gradually introduced so that costs and benefits can be properly monitored in order not to damage the financial sustainability of the scheme.

Caution is recommended on providing benefits to retired SOCSO staff and their dependents in light of surging medical costs for SOCSO staff and their dependents in private clinics. Health care costs are expected to continue to increase due to inflation and an the effects of an ageing population.

[2] It is well understood that the rate of return cannot be impressive due to the current economic conditions and that the unusual phenomena is seen that higher rate of return is obtained on short-term investments than long-term invest ment. However, it is important that a long-term investment strategy should be elaborated by looking at the projected necessary cash flow of the fund. See Table A.6.4 and A.6.8 to compare the current total contribution rate of 2.25 per cent.

Conservative management is also needed for the medical benefits for SOCSO staff and their dependents. As public health care with nominal out-of-pocket payments is still available to SOCSO staff and their dependents, it is recommended that some cost containment measures be introduced, including a ceiling on medical benefits.

Assuming that salaries are determined to reflect productivity, it is recommended that the salary of SOCSO staff should be adjusted by taking into account productivity growth in Malaysia.

Introduction

The Article 82 of the Employees' Social Security Act stipulates that a periodical actuarial review should be carried out at least at intervals of five years and at such times the Minister of the Human Resources may consider necessary and the report shall be submitted to the Minister. The present review was carried out as of 31 December 2010.

The review was structured as follows:

- Section 1 presents the economic and social context of Malaysia pertinent to the actuarial valuation.
- Section 2 presents the analysis of the overall past experience of the scheme.
- Section 3 presents the actuarial valuation of the Employment Injury Benefits Scheme.
- Section 4 presents the actuarial valuation of the Invalidity and Survivors' Benefits Scheme.
- Section 5 deals with other issues requested by SOCSO in conjunction with the actuarial valuation.

The recommendations laid down in this actuarial review are based on observations of the fact, social security principles embodie in ILO social security standards and internal good practices.

I. The economic and social context

1. International economic environment

Over the past few years, the global economy has experienced substantial turmoil, resulting in severe economic contraction. Global GDP contracted by 0.6 per cent in 2009 and world trade decreased by 10.7 per cent that year. The economic downturn was felt across the world, but most severely in advanced economies such as the United States, Japan, Europe and the United Kingdom.

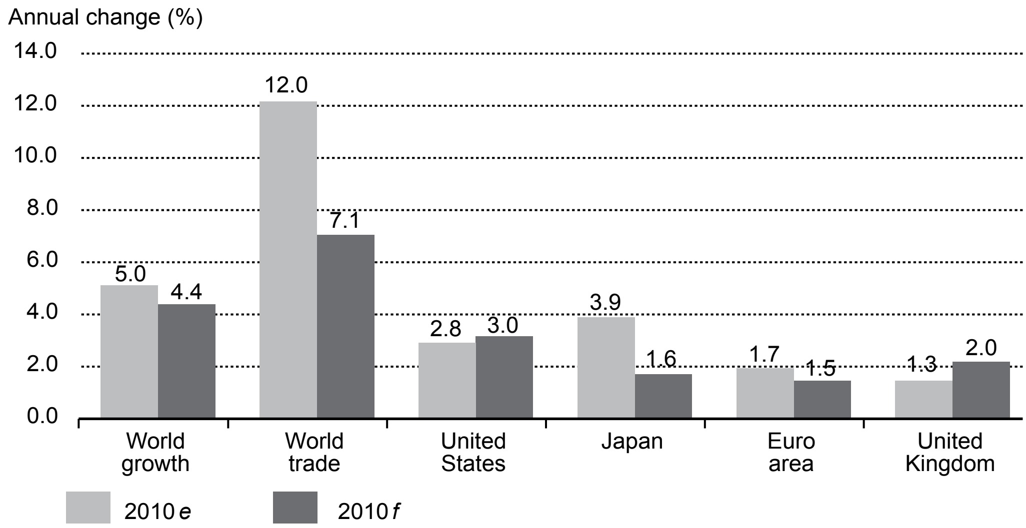
The global economy began to recover in the second half of 2009 and rebounded in 2010. Since then, global economic recovery has continued, although at an uneven pace. The recovery accelerated in the first half of the 2010 due to inventory restocking, continued policy support and the effect of coming off a low base, but this momentum slowed in the second half of 2010 as these temporary factors waned. Strong economic activity in emerging market economies led global growth, while advanced economies continued to struggle with crisis-induced and structural issues. In 2010, the emerging economies contributed more than two-thirds of global growth.

In 2010, periodic volatility associated with the sovereign debt crisis in the euro area affected international financial conditions. The escalation of government funding crisis in Greece heightened the risk of contagion to other Euro area economies. Despite a gradual improvement in the economy in the first half of the year, global financial markets came under pressure again in the second half following uncertainty over Ireland's ability to raise funds.

Table 1.1: World economy: Key economic indicators

	Real GDP Growth (%)		Inflation (%)	
	2009	2010e	2009	2010e
World Growth	**-0.6**	**5.0**	-	-
World Trade	**-10.7**	**12.0**	-	-
Advanced Economies				
United States	-2.6	2.8	-0.4	1.6
Japan	-6.3	3.9	-1.4	-0.7
Euro area	-4.1	1.7	0.3	1.6
United Kingdom	-4.9	1.3	2.2	3.3
East Asia	**5.4**	**9.2**	**0.3**	**3.2**
Asian NIEs	**-0.8**	**8.3**	**1.3**	**2.3**
Korea, Rep. of	0.2	6.1	2.8	2.9
Taiwan, China	-1.9	10.8	-0.9	1.0
Singapore	-0.8	14.5	0.6	2.8
Hong Kong, China	-2.7	6.8	0.5	2.4
China	**9.2**	**10.3**	**-0.7**	**3.3**
Asean-4	**1.1**	**6.9**	**2.3**	**3.8**
Malaysia	-1.7	7.2	0.6	1.7
Thailand	-2.3	7.8	-0.9	3.3
Indonesia	4.5	6.1	4.8	5.1
Philippines	1.1	7.3	3.2	3.8
India	**7.0**	**8.6**	**2.1**	**9.4**

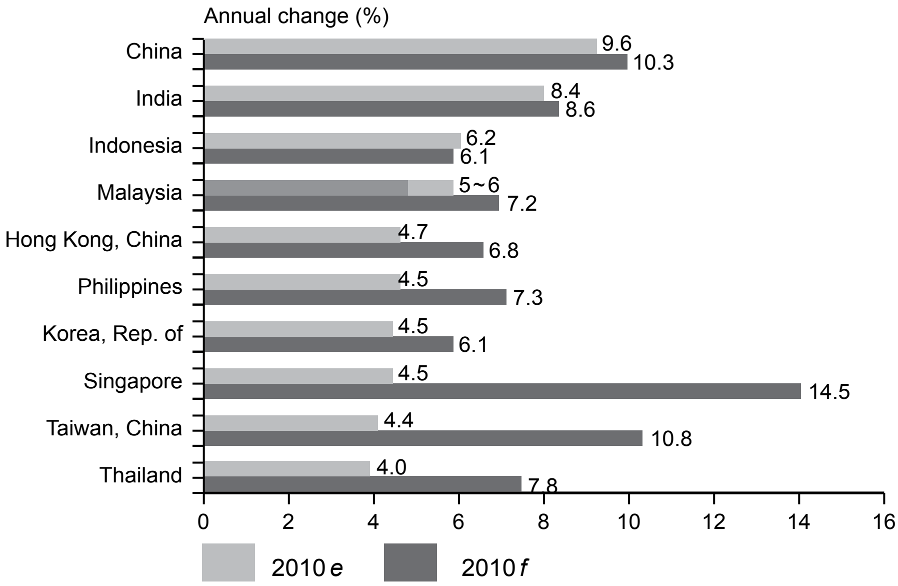
Chart 1.1: World growth, world trade and growth in major advanced economies (2010-2011)



e Estimate
f Forecast
Source: International Monetary Fund and National Authorities

In contrast, growth in the Asian region was exceptionally strong in the first half of the year. This was driven by robust domestic demand, intra-regional trade and inventory restocking in the advanced economies as well as the low-base effect. Nevertheless, growth in most regional economies began to moderate in the latter part of the year following the slower pace of improvement in external demand, reduced inventory restocking and a waning low-base effect. With relatively favourable growth prospects, coupled with rising inflationary pressures associated with increasing commodity prices, several central banks in the region began to normalize their policy rates to levels consistent with the prevailing economic conditions. Malaysia, Republic of Korea, Thailand, China and Indonesia increased their benchmark policy rates by cumulative hikes of between 25 and 125 basis points since 2010.

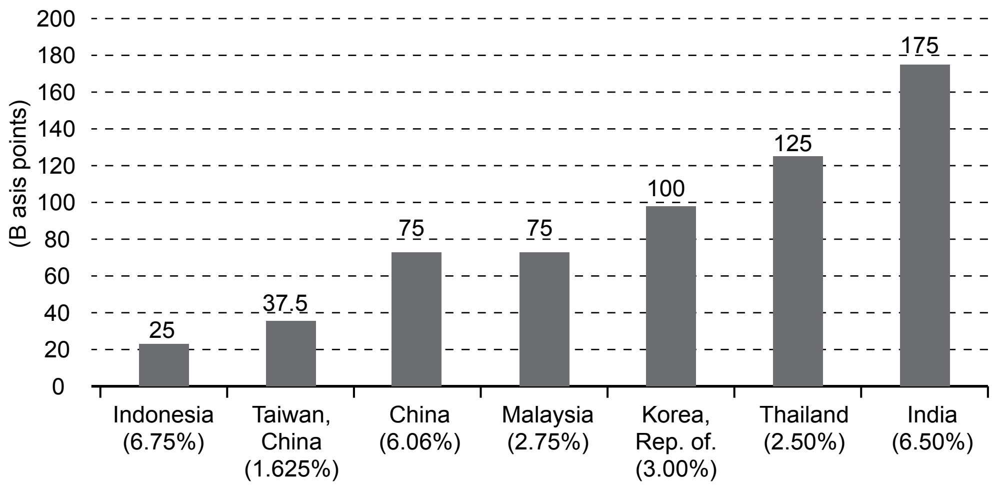
Chart 1.2: Regional economies: Real GDP growth



e Estimate
f Forecast
Source: International Monetary Fund and National Authorities

The pace of monetary policy normalization in the Asian region was complicated by the large capital inflows experienced by several regional economies, exacerbated by further quantitative easing in advanced economies. Several monetary authorities made an effort to mitigate the effects of capital inflows on domestic asset prices and exchange rates.

Chart 1.3: Cumulative movements of policy rates since 2010



Note: Current policy rates in parentheses, as at mid-March 2011

Source: National authorities

2. The Malaysian economy

The Malaysian economy sustained rapid growth, averaging almost 8 per cent annually, from the early 1980s to the mid-1990s. Economic growth remained sluggish in 1998 due to Asian financial crisis. The Malaysian economy recovered after 1999, sustaining a robust rate of growth. However, global economic recession hit the country in 2008 and the growth rate declined. GDP growth decreased sharply decreased and the economy contracted by 1.7 per cent in 2009 down from growth of 4.7 per cent in 2008. The economic downturn was reflected in many indicators particularly in Producer Price Index (PPI), which plummeted to -7.1 per cent in 2009 from 10.3 per cent in 2008.

In 2010, the Malaysian economy resumed strong growth, expanding by 7.2 per cent after the downturn in 2009. Growth was driven mainly by robust domestic demand and primarily by private sector activity.

Private consumption has expanded strongly over the years, supported by improvement in labour market conditions, a steady increase in income, more optimistic consumers and continued access to credit. The improvement in labour market conditions was reflected in the stronger growth of employment, lower retrenchments and lower unemployment rate.

Table1.2: Malaysia key economic indicators

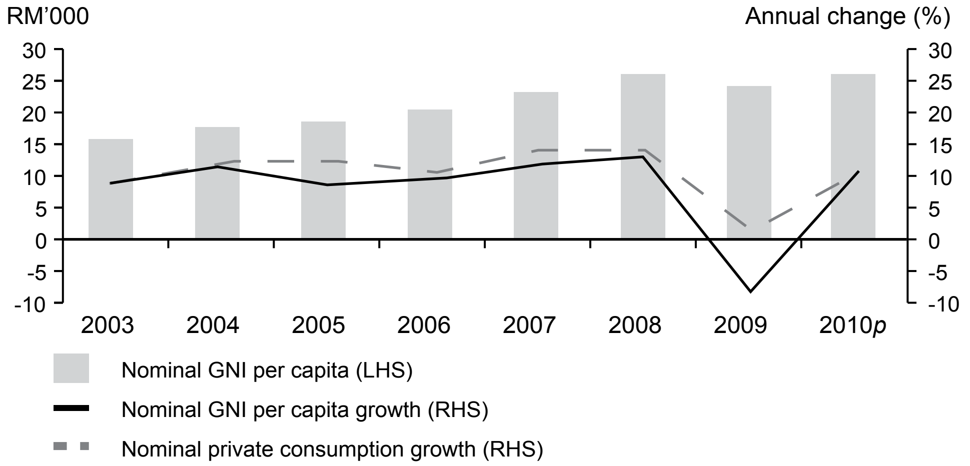
Year	Population	Labour force (million)	Unemployment rate	Employment (million)	Real GDP (1990 prices (MYR mill)	Growth rate (%)	CPI (2005= 100)	Rate of inflation (%)
1990	17.8	7.0	5.1%	6.7	115 701	9.7	64.7	2.7
1991	18.3	7.2	4.3%	6.9	125 648	8.6	67.6	4.2
1992	18.8	7.4	3.7%	7.1	135 445	7.8	70.7	4.8
1993	19.2	7.6	3.0%	7.4	146 749	8.3	73.2	3.6
1994	19.7	7.8	2.9%	7.6	160 311	9.2	76.0	3.6
1995	20.1	8.1	2.8%	7.9	175 470	9.5	78.6	3.5
1996	21.2	8.6	2.5%	8.4	190 520	8.6	81.2	3.5
1997	21.7	8.8	2.5%	8.6	197 100	3.5	83.5	2.6
1998	22.3	8.9	3.2%	8.6	182 200	-7.6	87.8	5.3
1999	22.9	9.2	3.4%	8.8	193 300	6.1	90.3	2.8
2000	23.5	9.6	3.1%	9.3	209 500	8.4	91.7	1.5
2001	24.0	9.7	3.6%	9.4	210 500	0.5	92.9	1.4
2002	24.4	9.9	3.5%	9.5	219 300	4.2	94.6	1.8
2003	24.9	10.1	3.6%	9.8	229 200	4.5	95.7	1.2
2004	25.6	10.3	3.5%	9.9	245 702	7.2	97.1	1.4
2005	26.1	10.4	3.5%	10.0	258 479	5.2	100.0	3.0
2006	26.6	10.6	3.3%	10.3	273 729	5.9	103.6	3.6
2007	27.2	10.9	3.2%	10.5	290 974	6.3	105.7	2.0
2008	27.5	11.1	3.3%	10.7	304 674	4.7	111.4	5.4
2009	27.9	11.3	3.7%	10.9	299 453	-1.7	112.1	0.6

Note: Minor discrepancies between different sources have been reconciled to the extent possible

Source: Miscellaneous publications of the Statistics Department and Bank Negara Annual reports

Chart 1.4: GNI per capita

Chart 1.4: GNI per capita



p Preliminary

Source : Departmen of Statistics, Malaysia and Bank Negara Malaysia

Potential output of the Malaysian economy expanded by 4 per cent in 2010, moderating from 5.3 per cent in 2007 and 4.2 per cent in 2008-09. The negative output gap gradually narrowed as the economy recovered; the output gap narrowed to -0.7 per cent in 2010 from -2.6 per cent in 2009.

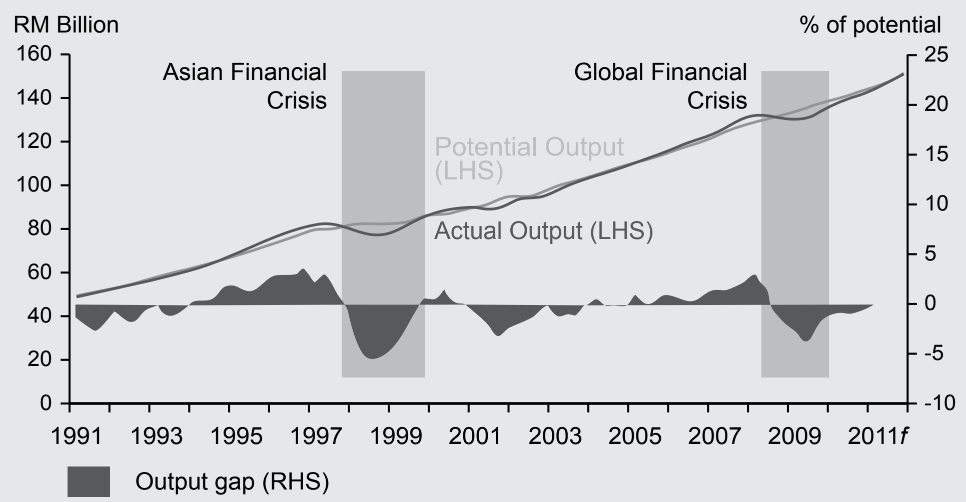
Table 1.3: Actual Real GDP and Potential Output

Period	Actual Real GDP	Potential output	Investment	Labour	(% of potential output)
	Annual change (%)				output gap
1993-1999	6.5	6.4	4.5	4.1	0.1
2000	8.9	4.8	25.7	4.4	0.5
2001	0.5	4.6	-2.1	1.5	-2.1
2002	5.4	4.1	0.6	1.9	-1.0
2003	5.8	5.9	2.8	3.6	-0.7
2004	6.8	5.4	3.6	1.0	0.2
2005	5.3	5.0	5.0	0.6	0.7
2006	5.8	5.7	7.5	2.1	0.8
2007	6.5	5.3	9.4	2.5	1.9
2008	4.7	4.2	0.7	1.3	0.3
2009	-1.7	4.2	-5.6	2.6	-2.6
2010e	7.2	4.0	9.4	2.5	-0.7

e : Estimate

Following the strong performance in 2010, the Malaysian economy was projected to grow at 5 per cent to 6 per cent in 2011. All economic sectors were projected to expand strongly, supported by expected continued growth of domestic demand. This was expected to be driven mainly by robust expansion in private sector activity. The employment situation was expected to improve. Private investment was expected to remain strong and contribute favourably to growth.

Chart 1.5: Actual and potential GDP



f Forecast

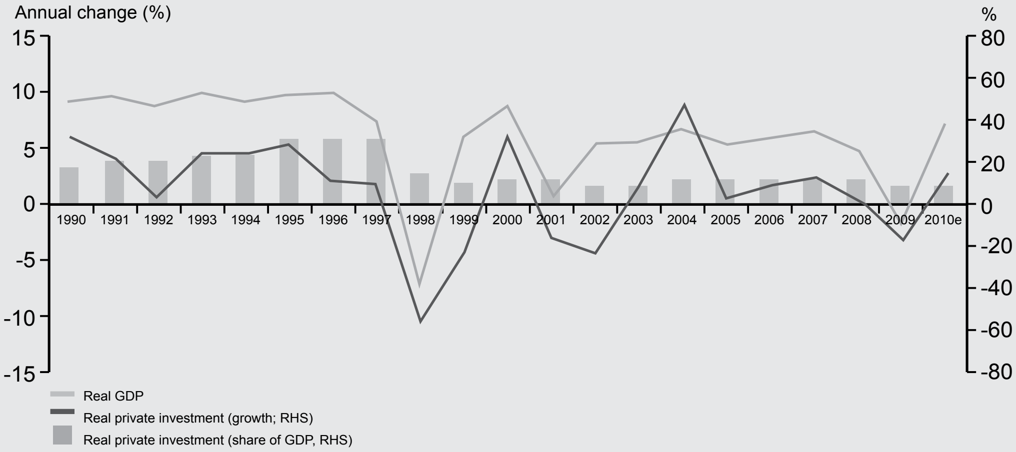
Source : Departmen of Statistics, Malaysia and Bank Negara Malaysia estimates

Private investment

Investment plays an important role in the growth and development of the Malaysian economy ensuring continuous enhancement and expansion of the country's production capacity for the future development of the economy.

Over the past decade, private investment has recorded an average growth rate of 6.7 per cent per annum in 2000-10, with its performance closely tracking the overall performance of the economy. After the 1997-98 Asian financial crisis, investment activity began to recover in 2000 amid improving business confidence. Progress, however, was interrupted in 2001 as the tech bubble burst, with the negative impact on capital spending lasting two years. Private investment subsequently recovered and peaked at a growth rate of 46.5 per cent in 2004. However the global financial crisis led to recession in the domestic economy in 2009. Private investment weakened considerably during this period.

Chart 1.6: Private investment and GDP (2000=100)



e Estimate

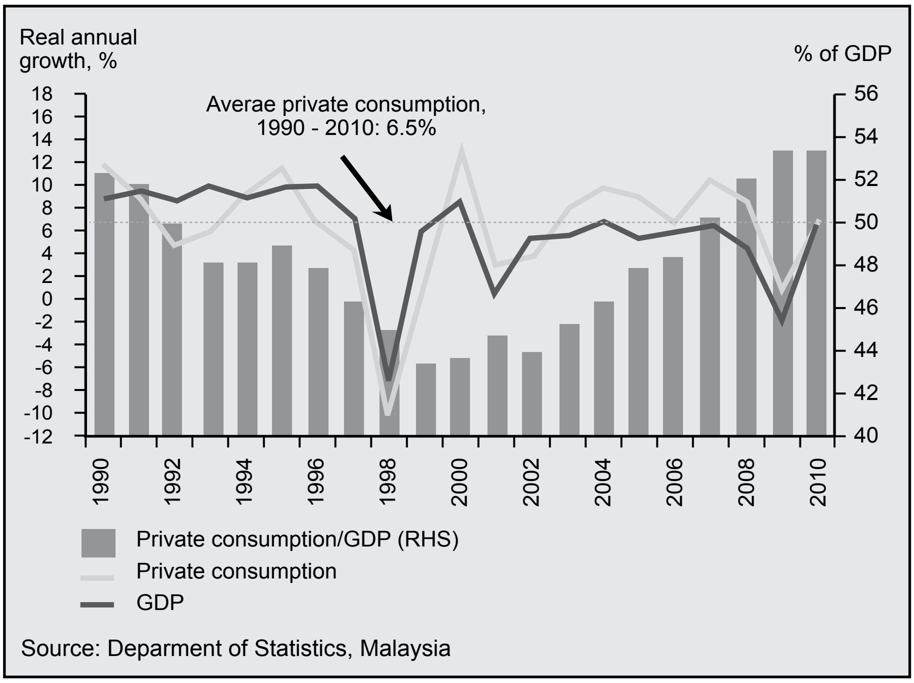
Source: Deparment of Statistics, Malaysia and Bank Negara Malaysia

Private investment was expected to grow 9.7 per cent in 2011, supported by capital spending in all economic sectors, but particularly services, manufacturing and mining. High investment activity was expected to be sustained by positive business confidence in line with strengthening domestic demand.

Private consumption

Private consumption is becoming an increasingly important component of the Malaysian economy. It was the main driver of economic growth in this recent decade, increasing at an annual average of 7.4 per cent during the period of 2000-09, which exceeded the 4.8 per cent average growth of real gross domestic product (GDP), and contributed more than two-thirds of total GDP growth. As a result, the share of real private consumption in GDP increased steadily from 43.8 per cent in 2000 to 535.5 in 2009.

Chart 1.7: Private consumption and GDP



Private consumption was expected to be the main contributor to domestic demand growth in 2011, with an expansion of 6.9 per cent. This was attributable to favourable labour market conditions, higher disposable income and sustained consumer confidence.

3. Population and demographics

The total population of Malaysia was 28.3 million, compared to 23.3 million in 2000, according to the 2010 Population and Housing Census of Malaysia. That gives an average annual population growth rate of 2.0 per cent for 2000-10. Looking at the past few decades, the average annual population growth rate of Malaysia was stable from 1980-20, but has slowed since 2000; 2.6 per cent during 1980-91, 2.6 per cent during 1991-00 and 2.0 per cent during 2000-10.

The proportion of the population under the age of 15 years decreased from 33.3 per cent in 2000 to 27.6 per cent in 2010. In contrast, the proportion of working age population (15 to 64 years) increased to 67.3 per cent in 2010 from 62.8 per cent in 2000. The proportion of population aged 65 years or over increased to 5.1 per cent as in 2010 from 3.9 per cent in 2000, indicating a transition towards ageing population of Malaysia.

4. Labour market

With the global economic recession since 2008, the labour market of Malaysia has experienced a slowdown in employment and labour force growth and an increase in retrenchments and unemployment. Employment growth decreased to 1.6 per cent in 2008 from 2.1 per cent in 2007 and then plummeted to 0.4 per cent in 2009. The labour force grew by 1.6 per cent in 2008 compared to 2.0 per cent in 2007 and dropped to 0.8 per cent in 2009. At the same time, retrenchments continued to increase; 14,035 in 2007, 24,033 in 2008 and 25,064 in 2009. The unemployment rate increased to 3.7 per cent in 2009 from 3.2 per cent in 2007.

Table 1.4: Selected labour market indicators

	2006	2007	2008	2009
Employment (thousand persons)	11 159.0	11 398.0	11 576.5	11 620.5
Annual change (%)	2.4	2.1	1.6	0.4
Labour force (thousand persons)	11 544.5	11 775.1	11 967.5	12 061.1
Annual change (%)	2.2	2.0	1.6	0.8
Retrenchments (persons)	15 360.0	14 035.0	24 033.0	25 064.0
Unemployment rate (% of labour force)	3.3	3.2	3.3	3.7
Real labour productivity growth (%)	3.3	4.2	3.1	-2.1

Note: 1. Based on estimates by Economic Planning Unit 2. Based on estimates by Bank Negara Malaysia

Source: Bank Negara Malaysia, Economic Planning Unit, and Ministry of Human Resources

II. Analysis of the overall experience of the scheme

1. Income and expenditure

Table 2.1 summarizes the income and expenditure accounts of the scheme. It covers the individual years of the inter-valuation period 2005-10.

Table 2.1: Summary of SOCSO income and expenditure accounts (MYR '000)

		2005	2006	2007	2008	2009	2010
Income	Contributions (1)	1 382 156	1 586 149	1 689 568	1 834 655	1 867 157	2 007 867
	Investment income (2)	521 935	606 885	884,825	731 668	687 291	879 629
	Other income (3)	30 135	26 516	32 142	4 286	16 991	28 573
	Total income	1 934 226	2 219 550	2 606 535	2 570 609	2 571 439	2 916 069
Expenditure	Benefit expenditure	889 894	969 976	1 070 224	1 199 145	1 408 724	1 699 714
	Administration	123 436	145 129	165 438	189 468	190 643	238 836
	Total expenditure	1 013 330	1 115 105	1 235 662	1 388 613	1 599 367	1 938 550
Surplus	Surplus before adjustment	920 896	1 104 445	1 370 873	1 181 996	972 072	977 519
	Adjustments (4)	-59 180	152 877	54	-340 113	327 956	-8 842
	Adjusted surplus	861 716	1 257 322	1 370 927	841 883	1 300 028	968 677

Note: (1) Contributions are recorded on cash basis.
(2) Refers to realised investment income.
(3) Includes interest on the various loan funds.
(4) Includes reversal of losses/(losses) of book value of quoted shares, gains/(losses) in foreign currency translation and any provision made related to investment.

The sum of the figures may not tally with the actual figure due to rounding.

Some comparative figures were reclassified to conform to the classification of the current year.

Source: SOCSO Annual Reports

Contribution income increased steadily over the period, and exceeded the MYR1.5 for the first time in 2006. Investment income fluctuated due to the economic crisis in 2008, but recently recovered.

Benefit expenditure continuously increased over the period, experiencing a particularly sharp increase from 2009 to 2010 due to benefit improvements effected in these years.

Total income fluctuated over the period, with a noticeable trough in 2008 and 2009. This contrasts with a steady increase from the beginning of the scheme until 1999. Steady increase of the total expenditure continued over the period. In consequence, the surplus of income over expenditure has fluctuated considerably.

Tables 2.2 and 2.3 provide a breakdown of the figures in Table 2.1 by the individual branches, i.e. the Employment Injury branch and Invalidity and the survivors' benefits branch. These tables display more or less the same trends as seen in Table 2.1. It should be noted that total expenditure has exceeded the contribution income since 2008 for the Invalidity and survivors' benefit branch and that the branch is currently using part of its investment income to pay out benefits. Total investment income is allocated in proportion to the respective funds at the beginning of the year, on the liabilities side of the balance sheet (Table 2.3).

Table 2.2: Income and expenditure accounts of the employment injury Benefits branch (MYR '000)

		2005	2006	2007	2008	2009	2010
Income	Contribution	760 186	872 382	929 262	1 009 060	1 026 936	1 104 327
	Investment	264 692	326 736	478 200	394 780	378 010	483 796
	Other income	16 574	14 584	17 678	2 357	9 345	15 715
	Total income	1 041 452	1 213 702	1 425 140	1 406 197	1 414 291	1 603 838
Expenditure	Benefits	378 347	394 034	433 919	484 717	586 410	654 112
	Administration	67 890	79 821	90 991	104 207	104 854	131 360
	Total expenditure	446 237	473 855	524 910	588 924	691 264	785 472
Surplus	Surplus before adjustment	611 655	731 887	928 391	826 359	712 078	818 366
	Adjustments	-48 989	92 042	-28 131	-196 148	191 325	-4 863
	Adjusted surplus	562 666	823 929	900 260	630 211	903 403	813 503
Allocations	Technical reserve	173 371	166 004	250 260	223 101	220 493	209 544
	Contingency reserve	2 033	7 936	11 498	19 501	35 926	32 085
	Free reserve	387 262	649 989	638 502	387 609	646 984	571 874

Please refer to Table 2.1 for notes on specific items.

Table 2.3: Income and expenditure accounts of the Invalidity and Survivors' Benefits Branch (MYR '000)

		2005	2006	2007	2008	2009	2010
Income	Contribution	621 970	713 767	760 306	825 595	840 221	903 540
	Investment	257 243	280 149	406 625	336 888	309 281	395 833
	Other income	13 560	11 932	14 464	1 929	7 646	12 858
	Total income	892 773	1 005 848	1 181 395	1 164 412	1 157 148	1 312 231
Expenditure	Benefits	511 547	575 942	636 305	714 428	822 314	1 045 602
	Administration	55 546	65 308	74 447	85 261	85 789	107 476
	Total expenditure	567 093	641 250	710 752	799 689	908 103	1 153 078
Surplus	Surplus before adjustment	325 681	364 598	470 643	364 723	249 045	159 153
	Adjustments	-26 631	68 795	24	-153 051	147 580	-3 979
	Adjusted surplus	299 050	433 393	470 667	211 672	396 625	155 174
Allocations	Invalidity pension fund	299 050	433 393	470 667	211 672	396 625	155 174

Note: Please refer to Table 2.1 for notes on specific items.

2. Balance sheet

Table 2.4 summarizes the balance sheets of the scheme for the period 2005-10. On the long-term liabilities side, the table highlights the continuing growth of the social security fund and of each of its sub-funds. On the assets side, long-term investments grew steadily until 2007, but fell sharply in 2008 before recovering in 2009. Short-term investments grew until 2008 except for a period of stagnation in 2007. They sharply decreased in 2009. Although long-term investment and short-term investments fluctuated over the period, total net assets increased steadily exceeding MYR18 billion in 2010.

Table 2.4: Summary of SOCSO balance sheets (MYR '000)

	2005	2006	2007	2008	2009	2010
Long-term liabilities						
Employment Injury Branch						
Technical Reserve	2 777 162	2 943 166	3 193 426	3 416 527	3 637 020	3 846 564
Contingency Reserve	202 646	210 582	222 080	241 581	277 507	309 592
Free Reserve	3 771 780	4 417 654	5 054 270	5 445 905	6 092 627	6 666 165
Total	6 751 588	7 571 402	8 469 776	9 104 013	10 007 154	10 822 321
Invalidity Pension Fund	6 064 878	6 497 300	6 967 405	7 179 051	7 575 675	7 730 849
Total Social Security Fund	12 816 466	14 068 702	15 437 181	16 283 064	17 582 829	18 553 170
Other Funds (1)	73 327	76 255	77 455	73 456	73 719	72 054
Grand Total	12 889 793	14 144 957	15 514 636	16 356 520	17 656 548	18 625 224
Long-term assets						
Fixed Assets	145 965	234 166	248 234	320 438	438 903	543 936
Construction in progress	46 756	23 096	135 656	187 933	120 948	5 005
Investment (long-term)(2)	8 312 622	9 297 713	10 038 745	8 652 078	9 900 379	9 386 936
Loans (3)	80 359	80 686	82 082	78 557	58 737	58 348
Subtotal	8 585 702	9 635 661	10 504 717	9 239 006	10 518 967	9 994 225
Short-term assets						
Short term investments	4 098 000	4 232 000	4 747 500	6 851 855	6 992 622	8 498 516
Cash	29 423	57 107	36 474	50 681	37 350	46 440
Other debtors	205 933	243 000	263 484	259 714	148 855	135 026
(-) Other creditors	29 265	22 811	37 539	44 737	41 247	48 984
Subtotal	4 304 091	4 509 296	5 009 919	7 117 513	7 137 580	8 630 998
Grand Total	12 889 793	14 144 957	15 514 636	16 356 519	17 656 547	18 625 223

Notes: (1) Includes Loan Funds for Housing, Education, Vehicle and Computer and Medical Trust Account for retired SOCSO staff.
(2) Bonds are stated at cost, adjusted for amortization of premium or accretion of discount to maturity. Shares are stated at the lower of cost ormarket value.
(3) Amounts outstanding from loans made out of the various Loan Funds.

Source: SOCSO Annual Reports

3. The investment of the social security fund and the yield

Analysis of the investment portfolio by major categories, inclusive of both short-term and long-term investments, is provided in Table 2.5 for the period 2007-10. Provisional figures are shown for the year 2010.

Table 2.5: Investment analysis

Category of investment	Value on 1st Jan (MYR '000)	Per cent Distri-bution	Value on 31st Dec (MYR '000)	Per cent Distri-bution	Investment income (MYR '000)	Yield %
Year 2007						
Government and govt. guaranteed securities (1)	5 572 954	41	6 221 513	42	249 571	4.32
Private debt securities	1 521 444	11	1 934 005	13	98 190	5.85
Equities	2 208 362	16	1 934 669	13	415 088	22.27
Money market	4 232 000	31	4 747 500	32	173 176	3.93
Total	13 534 760	100	14 837 687	100	936 025	6.82
Source: Annual Report 2007						
Year 2008						
Government and govt. guaranteed securities	6 221 513	42	6 402 361	41	269 224	4.36
Private debt securities	1 934 005	13	1 973 899	13	96 971	5.09
Equities (1)	1 883 227	13	1 723 673	11	193 684	11.35
Money market	4 747 500	32	5 404 000	35	188 309	3.78
Total	14 786 245	100	15 503 933	100	748 188	5.07
Source: Annual Report 2008						
(1) The investment income figure includes amortization of premiums or accretion of discounts on government securities.						
Year 2009						
Government and govt. guaranteed securities	6 402 361	41	8 873 374	53	354 260	4.75
Private debt securities	1 973 899	13	1 864 266	11	98 998	5.30
Equities (1)	1 723 673	11	2 398 884	14	105 329	5.24
Money market	5 404 000	35	3 740 800	22	108 796	2.41
Total	15 503 933	100	16 877 324	100	667 383	4.21
Source: Annual Report 2009						
(1) The value of equities is shown at cost, and therefore differs from the value in the Balance Sheet.						
Year 2010 (provisional)						
Government and govt. guaranteed securities	8 873 374	53	8 258 181	46	386 205	4.61
Private debt securities	1 864 266	11	2 045 912	11	116 015	6.12
Equities (1)	2 398 884	14	2 725 560	15	259 961	10.69
Money market	3 740 800	22	4 855 800	27	117 448	2.77
Total	16 877 324	100	17 885 453	100	879 629	5.19
Source: Unaudited accounts statement for 2010.						
(1) The value of equities is shown at cost, and therefore differs from the value in the Balance Sheet.						

Table 2.6 shows the actuarial yield rate on the Social Security Fund. As shown in the table, the real yield rate plummeted to -0.5 per cent in 2008 due to the global financial crisis.

Although it is a provisional figure, 53 per cent out of the social security fund in 2009 was invested in government bonds and government guaranteed securities compared to 42 per cent in 2007 and 41 per cent in 2008. As the government bonds and government guaranteed securities provides lower rate of return, a modification of the portion to an appropriate level taking into account the capital market conditions should be considered.

Table 2.6: Actuarial rate of return on the social security fund (amounts in MYR '000)

Year	Fund on 01-Jan	Fund on 31-Dec	Investment income	Yield rate (%)	Inflation rate (%)	Real yield rate (%)
1990	1 737 817	2 018 824	161 767	9.0	3.1	5.9
1991	2 018 824	2 340 803	170 566	8.1	4.4	3.7
1992	2 340 803	2 731 425	182 074	7.4	4.7	2.7
1993	2 731 425	3 274 926	286 239	10.0	3.5	6.5
1994	3 274 926	3 860 617	282 812	8.3	3.7	4.6
1995	3 860 617	4 463 988	274 001	6.8	3.4	3.4
1996	4 463 988	5 008 952	362 040	7.9	3.5	4.4
1997	5 008 952	5 766 481	347 451	6.7	2.7	4.0
1998	5 766 481	6 678 829	490 389	8.2	5.3	2.9
1999	6 678 829	7 862 805	475 741	6.8	2.8	4.0
2000	7 862 805	8 525 942	531 033	6.7	1.6	5.1
2001	8 525 942	9 448 243	529 710	6.1	1.4	4.7
2002	9 448 243	10 007 201	484 618	5.1	1.8	3.3
2003	10 007 201	11 100 968	511 985	5.0	1.5	3.5
2004	11 100 966	11 952 373	548 730	4.9	1.5	3.3
2005	11 955 475	12 816 466	551 827	4.6	3.0	1.6
2006	12 814 308	14 068 702	592 413	4.5	3.6	0.9
2007	14 067 454	15 437 181	936 025	6.6	2.0	4.6
2008	15 437 181	16 283 064	748 188	4.8	5.4	-0.5
2009	16 283 064	17 582 829	667 383	4.0	0.6	3.4
2010	17 582 829	18 553 170	879 629	5.0	1.8	3.2

Note: Table 2.4 refers to total fund which includes current liabilities, current asset and non-current assets whereas Table 2.5 refers to total value of SOCSO investment which is the partial of total fund representing short-term and long-term investment; therefore, the fund is different between Table 2.4 and Table 2.5. The fund in the Table 2.6 refers to the fund in Table 2.4.

Source: SOCSO Annual Reports and unaudited accounts statement for 2010.

4. Statistical data on the insured population and its main characteristics Insured salaries

Table 2.7 shows the average monthly insured salary of the contributing population, derived from the employee database. Figures are shown for 2011 and those for 2002 (seventh valuation) and 2006 (eighth valuation) for comparison. These figures are based on an analysis of contributions in a given month of each year, so that they reflect effects on the actual on the salary, i.e. they are not affected by the contribution density.

Table 2.7: Average monthly salary by age (in MYR)

Agegroup	Seventh valuation (2002)		Eighth valuation (2006)		Ninth valuation (2010)	
	Male	Female	Male	Female	Male	Female
[15-19]	598	556	436	473	684	670
[20-24]	952	863	688	651	1 118	1 070
[25-29]	1 287	1 184	1 063	942	1 633	1 561
[30-34]	1 399	1 257	1 312	1 058	1 883	1 796
[35-39]	1 425	1 196	1 362	1 152	1 989	1 818
[40-44]	1 432	1 158	1 472	1 273	1 987	1 688
[45-49]	1 404	1 070	1 940	1 389	1 984	1 607
[50-54]	1 354	994	1 932	1 389	1 931	1 549
[55-59]	1 111	861	1 156	658	1 378	1 152
[60+]	970	789	843	555	1 001	898
Average	1 255	1 072	1 214	960	1 625	1 472

Source: SOCSO internal data.

Past service

Table 2.8 shows the credit distribution (past service) of the active population as of 2010 by sex and agegroup. The average past service for each age group is also indicated.

Table 2.8: Past service credit distribution of the active population, 2010

Age	0- 12	13-24	25-36	37-48	49-60	61-72	73-84	85-96	97-108	109-120	121-132	133-144	145-156	157-168	169-180	> 180	Total	Average credit (months)
Males																		
15-19	36	21	8	3	5	5	2	1	3	7	1	6	1	0	0	0	100	8
20-24	85	14	1	0	0	0	0	0	0	0	0	0	0	0	0	0	100	20
25-29	22	44	26	7	1	0	0	0	0	0	0	0	0	0	0	0	100	43
30-34	2	10	23	28	21	12	4	1	0	0	0	0	0	0	0	0	100	74
35-39	1	1	3	6	15	21	21	17	11	4	1	0	0	0	0	0	100	106
40-44	0	0	1	1	2	7	11	13	14	14	14	20	2	0	0	0	100	123
45-49	0	0	0	0	1	2	4	7	8	9	12	46	8	0	0	0	100	130
50-54	0	0	0	0	1	1	2	3	5	8	11	57	10	1	0	0	100	132
55-59	0	0	0	0	1	1	1	2	3	6	10	62	10	1	0	0	100	129
60+	0	0	0	1	1	1	2	2	3	7	14	56	9	1	0	0	100	121
All ages	3	5	5	5	5	5	6	6	6	7	8	45	14	0	0	0	100	99
Females																		
15-19	48	32	7	1	1	1	0	0	1	1	1	4	0	0	0	0	100	8
20-24	89	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	20
25-29	24	45	25	6	1	0	0	0	0	0	0	0	0	0	0	0	100	41
30-34	3	12	25	26	19	11	3	1	0	0	0	0	0	0	0	0	100	74
35-39	1	1	3	6	14	20	21	17	11	4	1	0	0	1	0	0	100	108
40-44	0	0	1	1	2	6	11	12	13	14	14	24	0	0	0	0	100	126
45-49	0	0	0	0	1	1	3	6	7	8	12	51	0	0	0	0	100	132
50-54	0	0	0	0	0	1	1	2	4	7	10	61	0	0	0	0	100	133
55-59	0	0	0	0	1	1	1	1	2	5	10	64	0	0	0	0	100	131
60+	1	0	0	1	1	1	2	2	3	6	13	59	0	0	0	0	100	126
All ages	3	1	2	2	1	4	2	3	2	6	12	45	14	0	0	3	100	97

credit range (in months)

5. Active population, 2010

The active population of 2010 obtained by the computer runs has been adjusted to 5,505,000. This figure relates to the population in all age groups, and therefore indicates the coverage of the Employment Injury Branch. For the Invalidity Pension Branch, only the population under age 55 is relevant. Therefore, the respective figures retained for the valuation are as follows:

- Active population (2010) of Employment Injury Branch: 5,505,000.
- Active population (2010) of Invalidity Pension Branch: 5,230,000.

Table 2.9: Active and insured population by age, 2010 (in '000)

Age-group	Active			Registered		
	Male	Female	Total	Male	Female	Total
[15-19]	197	140	337	265	190	455
[20-24]	558	463	1 021	939	779	1 719
[25-29]	590	486	1 076	1 113	980	2 093
[30-34]	472	352	824	1 009	874	1 883
[35-39]	393	269	662	903	777	1 680
[40-44]	336	209	545	854	712	1 567
[45-49]	277	170	448	750	614	1 364
[50-54]	206	112	318	652	492	1 144
[55-59]	117	51	168	618	441	1 059
[60-64]	56	17	72	280	154	434
[65 +]	28	6	34	303	126	429
Total (15-54)	3 031	2 200	5 230	6 486	5 419	11 905
Grand Total	3 232	2 274	5 505	7 687	6 140	13 828

Note: Numbers reported as unknown sex and unknown age have been proportionately redistributed to overall sex and age groups.
Source: SOCSO internal data

6. Summary and conclusion

(1) The analysis of income and expenditure accounts for the period 2005-2010 has shown that the trends over this period were not exceptional.

(2) It should be noted that total expenditure has exceeded contribution income since 2008 in the Invalidity and Survivors' Benefit branch and that the branch is currently using a part of its investment income to pay out benefits.

(3) The analysis of the balance sheets over the same period reveals the continuing growth of the Social Security Fund and each of its sub-funds.

(4) As regards the investment yield, a positive real yield was secured throughout the social security fund as a whole. However, return on investment since 2005, from the perspective of real rate of return, hasn't been so encouraging. Efforts need to be made to increase the return on investment for reasons of safety.

(5) An analysis of data on the insured population from different sources, as well as of data on the insured salary bills, has revealed discrepancies. After certain reconciliations and adjustments, the 2010 Active population was estimated at 5,505,000 for the Employment Injury Branch and at 5,230,000 for the Invalidity Pension Branch.

III.Valuation of employment injury benefits

1. Introduction: purpose of the valuation and the method of approach

The purpose of the valuation is, first, to analyse progress since the last valuation. This analysis is conducted with due reference to the financial system applied to the individual benefits. The analysis should lead to an assessment of whether and to what extent the scheme of benefits has “lived within” the available means, i.e. the contribution rate of 1.25 per cent of insurable salaries. It should also assess the amount of the technical reserve required on the valuation date for future payments of the currently existing benefits compared with the amount of the reserve held by the scheme.

Upon the request from the investment department of SOCSO, the current valuation provides the cash flow projection of the expenditure of the scheme and the pay-as-you-go (PAYG) cost rate as a reference for establishing future investment strategy.

2. The financial systems for employment injury benefits branch

The financial system means the arrangement according to which resources are raised to meet expenditure on benefits and administration. The financial system varies according to the type of benefit, i.e. between (a) short-term benefits and (b) long-term benefits.

Short-term benefits

The short-term benefits include medical benefits, temporary disablement benefits and funeral benefits of the Employment Injury Benefits Branch. The annual expenditure on these benefits in relation to the total insured salary bill is expected to stabilize in a relatively short time after the scheme starts operating. under the PAYG system (or the annual assessment system), the contribution rate is set so that the expected contribution income in a given year equals the expected benefit expenditure in the same year plus a small margin to build up a contingency reserve. The target level of this reserve, the purpose of which is to meet unexpected variations in receipts or expenditure, has been set at the level of the average six months’ expenditure of the benefits over the preceding three years.

Long-term benefits

Long-term benefits include permanent disablement benefits and dependents’ benefits which are essentially in the form of pensions for life, although they may be partly or fully commuted to a lump sum under specified conditions. The rate of pension depends on the insured salary and, in the case of permanent disablement benefits, on the degree of disability, but does not depend on past service of the individual. In contrast to short-term benefits, the current expenditure on these long-term benefits in relation to the total insured salary bill is expected to grow continuously for several decades until the scheme attains maturity. The capitalized present value of benefit awards in relation to the insured salary bill is expected to stabilize much sooner.

The financial system applied to these benefits is the terminal funding system, sometimes called the system of assessment of constituent capitals. The contribution rate is set such that the expected contribution income in a given year should equal the capitalized present value of the future benefits awarded in the year. In other words, all the new benefits in the year are fully pre-funded at the time of award. This leads to the build-up of a technical reserve which, in theory, should at any time be equal to the capitalized value of all pensions in payment so long as the assumptions for the calculation hold. A margin is added in order to constitute a contingency reserve for unexpected variations of income and expenditure. The target level of this reserve has been set at the level of the average six months' capitalized present value of benefit awards over the preceding three years.

Administration costs

Administrative costs are covered by adding a margin to the sum of the contribution rates set for short- and long-term benefits. The previous actuarial valuation report in which the contribution rate was set shows that the margin added for administration costs was 0.1 per cent of insured salaries.

3. The frequency experience

Table 3.1 shows, for the years 2006 to 2010, the number of cases of the various principal benefits of the Employment Injury Benefits Branch. The number of permanent disablement (PDB) cases increased. Temporary disablement benefit (TDB) and dependants' benefit cases show some fluctuation.

Table 3.1: TDB, PDB and dependents' benefit experience

	Numbers					Frequencies (per 10,000contributors)	
	2006	2007	2008	2009	2010	2006(1)	2010(2)
Number of reported accidents	58 321	56 339	54 133	55 186	57 639	153	138
- of which, industrial accidents	40 617	38 657	35 092	34 376	35 603	107	85
- of which, commuting accidents	17 704	17 682	19 041	20 810	22 036	47	53
Temporary disablement benefit							
- number of terminated cases	44 366	48 627	46 695	47 726	48 804	117	117
- corresponding benefit days	1 057 587	1 950 124	2 006 295	2 112 898	2 152 080	2 783	5 144
- average duration(days)	23.8	40.1	43.0	44.3	44.1	23.8	44.1
Permanent disablement benefit							
- number of awards	21 615	22 600	10 931	13 228	13 972	57	33
- of which, pension cases	654	654	739	895	904	1.7	2.2
Dependants' benefit							
- number of awards	928	1 014	1 067	1 049	1 077	2.4	2.6
Funeral Grant							
- number of cases	843	933	972	1 016	1 041	2.2	2.5

Note: (1) For the last column, the average number of 2006 contributors has been taken as 76 per cent of the 2006 Active Population, that is, 76 per cent of 5,004,000 = 3,803,040

(2) For the last column, the average number of 2010 contributors has been taken as 76 per cent of the 2010 Active Population, that is 76 per cent of 5,505,284 = 4,184,016

Source: SOCSO Annual Reports

In order to calculate benefit frequencies, i.e. the number of cases per 10,000 full contributions, the average number of contributors has been estimated by applying the average contribution density of 0.76 for both sexes to the active population of the Employment Injury Branch of 5,505,284 in 2010, which gives the figure of 4,184,016 full contributors in 2010. It should be noted that the frequency of accidents decreased while the frequency of commuting accidents increased. The average duration of temporary disablement benefits as well as the frequency of permanent disability pensions and survivors' benefits increased.

4. Analysis of the expenditure on employment injury benefits

The expenditure of the Employment Injury Benefits Branch, during the period 2006-10, is analysed in Table 3.2. All benefit expenditure and administrative expenditure except for other expenses increased steadily over the whole period. The other expenses which comprise miscellaneous statutory expenses in addition to the expenditure to the core benefits show fluctuations with a noticeable trough in 2009.

It should be noted, however, that the expenditure shown in Table 3.2 is the current expenditure on the various items, corresponding to the income and expenditure account of the branch in Table 2.2. For valuation purposes, it is necessary to perform an analysis that is consistent with the respective financial systems. This is discussed in the next section.

Table 3.2: Employment Injury Branch expenditure by item (MYR 000'000)

	2006	2007	2008	2009	2010
Temporary Disablement (TDB)	71.8	85.2	94.1	104.0	109.2
Permanent Disablement (PDB)	170.2	187.9	214.6	274.8	306.4
Dependants'benefit	132.8	142.1	151.5	160.2	205.3
Medical benefit	4.4	4.6	4.9	4.9	4.9
Funeral benefit	1.4	1.6	1.6	1.6	1.6
Other expenses	13.4	12.5	18.0	40.8	26.7
Total	394.0	433.9	484.7	586.4	654.1
Administration	79.8	91.0	104.2	104.9	131.4
Grand total	473.8	524.9	588.9	691.2	785.5

Note 1: The respective items include both commuting and non-commuting accidents.

Note 2: PDB includes lump sums, periodic payments and constant attendance allowances.

Note 3: Other expenses include cost of medical and appellate boards, physical and vocational rehabilitation, activities promoting occupational safety and health, FCLB (penalties written off) and general expenditure not elsewhere classified.

Note 4: The individual figures may not add exactly to the totals due to rounding.

Source: SOCSO Accounts Statements and attached notes to the accounts

5. Retrospective cost analysis

This analysis expresses the relevant expenditure which should be covered by the contributions for each year and for each benefit item, according to the principle of the financial system as a percentage of the corresponding insured salary bill. The relevant expenditure signifies the current expenditure on the benefit in the year concerned, except for the long-term benefits, i.e. permanent disablement and dependants' benefits, for which it signifies the capitalized present value of new benefit awards in the year.

As far as the short-term benefits are concerned, the data for this analysis are taken as the benefit expenditures shown in the published income and expenditure accounts seen in Table 3.2. As regards long-term benefits such as permanent disablement and dependents' benefits, the relevant expenditure, which is the capitalized value of new awards, is not published in the annual report and is maintained internally by SOCSO. It is recommended that more information should become publicly available in the annual report.

The data on the capitalized present values of new awards for 2010 was not available from SOCSO internal sources and hence should be regarded as a provisional value.

Table 3.3: **Capitalized values of new awards** (MYR 000'000)

Year	Permanent Disablement benefit			Dependants' benefit
	Pensions	Lump sums	Total	
2000	63.2	146.8	210.0	170.6
2001	58.8	134.1	192.9	146.8
2002	64.4	127.6	192.0	151.2
2003	47.2	106.4	153.6	146.8
2004	54.0	109.7	163.7	165.7
2005	60.0	125.4	185.4	163.2
2006	52.0	120.2	172.2	165.6
2007	57.7	135.1	192.8	190.4
2008	73.1	158.4	231.5	205.4
2009	92.7	214.5	307.2	210.5
2010p	95.8	228.3	324.1	221.3

Note: 2010 figures are provisional.

Source: SOCSO internal data

The results of the relative cost analysis are shown in Table 3.4.

Table 3.4: **Retrospective cost analysis for employment injury benefits branch**
(amount in MYR million and expressed as a percentage of the insured salary bill)

Item	2006 Amount	%	2007 Amount	%	2008 Amount	%	2009 Amount	%	2010 Amount	%
Temporary Disablement (TDB)	71.8	0.10	85.2	0.11	94.1	0.12	104.0	0.13	109.2	0.12
Permanent Disablement (PDB)	172.2	0.25	192.8	0.26	231.5	0.29	307.2	0.37	324.1	0.37
Dependants' benefit	165.6	0.24	190.4	0.26	205.4	0.25	210.5	0.26	221.3	0.25
Medical benefit	4.4	0.01	4.6	0.01	4.9	0.01	4.9	0.01	4.9	0.01
Funeral benefit	1.4	0.00	1.6	0.00	1.6	0.00	1.6	0.00	1.6	0.00
Other expenses	13.4	0.02	12.5	0.02	18.0	0.02	40.8	0.05	26.7	0.03
TOTAL	428.8	0.61	487.1	0.66	555.5	0.69	669.0	0.81	687.8	0.78
Administration	79.8	0.11	91.0	0.12	104.2	0.13	104.9	0.13	131.4	0.15
GRAND TOTAL	508.6	0.73	578.1	0.78	659.7	0.82	773.9	0.94	819.2	0.93
Estimated Insured Salary Bill	69791		74341		80725		82155		88346	

Note 1: PDB includes capital values of pension awards and lump sum payments during each year.

Source: Table 3.2 and SOCSO internal data

The following Table 3.5 illustrates the trend of the relative costs since 1980 and that of the implied margin in the contribution rate.

Table 3.5: Trend in relative costs (per cent of the insured salary bill)

Year	Relative cost (%)	Margin
1981	0.43	0.82
1986	0.68	0.57
1991	0.73	0.52
1996	1.07	0.18
1997	1.18	0.07
1998	1.25	0.00
1999	0.99	0.26
2000	1.19	0.06
2001	1.02	0.23
2002	1.02	0.23
2003	0.84	0.41
2004	0.84	0.41
2005	0.85	0.40
2006	0.73	0.52
2007	0.78	0.47
2008	0.82	0.43
2009	0.94	0.31
2010	0.93	0.32

The above table suggests that, after steadily decreasing over several years, the margin in the contribution rate reduced to zero in 1998, but has since recovered. This trend is considered as a consequence of cost control and pro-active measures to prevent employment injuries and occupational diseases undertaken by SOCSO. It should be noted that the margins once widened to 0.43 per cent in 2008 shrank to 0.32 per cent in 2010 due to benefit improvements effected in 2009 and 2010.

6. Prospective cost estimation

A prospective approach was undertaken to complement the retrospective analysis in the previous section. It is based on the latest frequency and related experience of the benefits and taking into account the characteristics of the active population. Ideally this analysis should be carried out by sex and age-group, however, this is conditioned by data availability. For temporary disablement benefits, no sex or age breakdown of frequency was available and hence it is necessary to work with an overall incidence rate with both sexes and all ages combined. As regards permanent disablement and dependants' benefits, although the necessary information is available (see Table 3.6A), the age-distributions fluctuate from year to year to such an extent that their reliability is questionable. It is therefore necessary to abandon age analysis of the PDB and DB frequencies and to differentiate by sex alone in the estimation process. Nevertheless, the age characteristics of the active population reproduced in Table 3.6B have been taken into account. In addition, Table 3.6C shows the distribution of PDB cases by degree of disablement, from which the average degree of disablement is computed to be approximately 9.06 per cent in 2010.

Table 3.6A: Sex/age analysis of permanent disablement and dependants' benefit cases

	PDB cases			% of Total			DB cases			% of Total		
	2008	2009	2010	2008	2009	2010	2008	2009	2010	2008	2009	2010
Males												
15-19	386	410	434	4.2	3.7	3.7	80	90	113	8.2	9.5	11.3
20-24	1 323	1 601	1 544	14.4	14.3	13.1	182	178	173	18.6	18.8	17.3
25-29	1 386	1 641	1 665	15.1	14.7	14.1	130	125	118	13.3	13.2	11.8
30-34	1 330	1 673	1 673	14.5	14.9	14.2	125	108	102	12.8	11.4	10.2
35-39	1 310	1 610	1 720	14.2	14.4	14.6	95	84	105	9.7	8.9	10.5
40-44	1 221	1 511	1 629	13.3	13.5	13.8	88	105	106	9.0	11.1	10.6
45-49	997	1 284	1 411	10.8	11.5	11.9	83	94	80	8.5	9.9	8.0
50-54	739	869	1 027	8.0	7.8	8.7	85	63	82	8.7	6.7	8.2
55-59	295	366	419	3.2	3.3	3.5	51	42	49	5.2	4.4	4.9
60-64	113	144	184	1.2	1.3	1.6	36	33	32	3.7	3.5	3.2
65+	102	91	115	1.1	0.8	1.0	23	25	40	2.4	2.6	4.0
Total M	9 202	11 200	11 821	100	100	100	978	947	1 000	100	100	100
Females												
15-19	58	55	59	3.4	2.7	2.7	12	14	9	13.5	13.7	11.7
20-24	211	240	234	12.2	11.8	10.9	21	24	14	23.6	23.5	18.2
25-29	210	254	260	12.1	12.5	12.1	9	15	8	10.1	14.7	10.4
30-34	214	259	302	12.4	12.8	14.0	5	8	16	5.6	7.8	20.8
35-39	236	286	283	13.6	14.1	13.2	11	11	5	12.4	10.8	6.5
40-44	276	308	310	16.0	15.2	14.4	6	6	9	6.7	5.9	11.7
45-49	240	300	325	13.9	14.8	15.1	10	12	10	11.2	11.8	13.0
50-54	204	223	246	11.8	11.0	11.4	9	6	1	10.1	5.9	1.3
55-59	47	71	86	2.7	3.5	4.0	5	5	2	5.6	4.9	2.6
60-64	24	24	32	1.4	1.2	1.5	1	0	2	1.1	0.0	2.6
65+	9	8	14	0.5	0.4	0.7	0	1	1	0.0	1.0	1.3
Total F	1 729	2 028	2 151	100	100	100	89	102	77	100	100	100

Source: SOCSO internal data

Table 3.6B: Basis for prospective cost estimates of PDB and DB

APV factors													
X	A(x) ('000)	s(x)	d(x)	p(x)	y(x)	z(x)	a(x)	a(y)	a(z)	A*s*d(x)	A*s*d*a(x)	A*s*d*p(x)*a(y)	A*s*d(x)*a(z)
Males													
17	197	23	0.43	0.01	17	0	8 973	9 756	5 929	1 941	17 412 346	189 318	11 504 963
22	558	37	0.65	0.14	21	1	8 530	9 346	5 607	13 437	114 617 622	17 581 510	75 347 123
27	590	54	0.77	0.50	24	2	8 029	8 893	5 383	24 729	198 547 314	109 956 487	133 117 097
32	472	63	0.81	0.79	28	3	7 479	8 387	5 156	24 065	179 983 106	159 449 053	124 083 240
37	393	66	0.82	0.89	32	4	6 876	7 817	4 920	21 446	147 461 831	149 201 735	105 524 057
42	336	66	0.83	0.92	36	6	6 221	7 189	4 434	18 380	114 339 035	121 559 983	81 496 823
47	277	66	0.83	0.94	40	9	5 538	6 509	3 655	15 315	84 812 818	93 702 390	55 975 261
52	206	64	0.83	0.94	44	11	4 880	5 796	3 099	11 077	54 057 713	60 352 335	34 325 657
57	117	46	0.76	0.93	48	12	4 238	5 056	2 807	4 073	17 262 701	19 153 044	11 434 838
62	84	33	0.76	0.90	52	13	3 637	4 341	2 508	2 105	7 654 978	8 223 050	5 279 352
Total M	3 232	54	0.76							136 567	936 149 464	739 368 905	638 088 411
Females													
17	140	22	0.45	0.07	17	0	8 973	9 756	5 929	1 416	12 705 075	966 962	8 394 700
22	463	36	0.67	0.39	24	1	8 530	9 346	5 607	11 122	94 867 792	40 537 797	62 364 016
27	486	52	0.79	0.73	31	3	8 029	8 893	5 383	19 967	160 316 891	129 625 062	107 485 308
32	352	60	0.82	0.85	37	4	7 479	8 387	5 156	17 340	129 689 203	123 619 180	89 409 817
37	269	61	0.83	0.88	43	6	6 876	7 817	4 920	13 540	93 101 197	93 141 275	66 623 450
42	209	56	0.84	0.87	49	9	6 221	7 189	4 434	9 894	61 550 387	61 881 143	43 870 940
47	170	54	0.84	0.85	56	11	5 538	6 509	3 655	7 648	42 355 415	42 314 498	27 953 975
52	112	52	0.83	0.79	63	12	4 880	5 796	3 099	4 787	23 361 960	21 920 220	14 834 416
57	51	38	0.77	0.71	67	13	4 238	5 056	2 807	1 511	6 404 081	5 424 519	4 242 072
62	23	30	0.78	0.58	72	14	3 637	4 341	2 508	536	1 950 913	1 350 555	1 345 472
Total F	2 274	49	0.77							87 762	626 302 913	520 781 211	426 524 166
Total M+F	5 505									224 329	1 562 452 378	1 260 150 116	1 064 612 577

Explanation of column headings:

A(x), Active population 2010; s(x), average daily rate of salary; d(x), density factor; p(x), proportion married; y(x) average age of the spouse z(x), average age of children; a(x), Actuarial Present Value (APV) factor for PDB; a(y), APV factor for widows' benefit; a(z), APV factor for orphans' benefit.

Table 3.6C: PDB cases by degree of disablement

%	2008	2009	2010
Below 10	8 745	10 421	11 145
10-19	1 293	1 726	1763
20-29	362	493	443
30-39	217	213	243
40-49	60	102	108
50-59	53	64	69
60-69	44	62	52
70-79	71	59	66
80-89	29	24	22
90-99	4	11	12
100	53	53	49
Totals	10 931	13 228	13 972
Average degree (%)	9.30	9.28	9.06

Source: SOCSO Annual Reports

The results of the prospective cost estimation are shown in Table 3.7. This incorporates certain ad hoc adjustments to the results obtained from the application of the formulae, in view of the perceived downward bias in the wage of PDB and DB awardees compared to the average wage of active persons. The ninth actuarial valuation is based on data of 2010 as followed;[3]

• average wage of active males: MYR1,625;
• average wage of active females: MYR1,472;
• average wage of PDB awardees (males): MYR1,154 (= 71 per cent of MYR1,625);
• average wage of PDB awardees (females): MYR868 (= 59 per cent of MYR1,472); and
• average amount of new awards of widows' pensions: MYR500 (= 57 per cent of the expected
• average widows' pension MYR878 = 60 per cent of 90 per cent of MYR1,625).

[3] These adjustents are based on the 1996 actuarial report.

Table 3.7: Prospective cost estimation of TDB, PDB and DB

TDB	Males	Females	Total
Active persons (2010)			5 505 284
Exposure to risk			4 184 016
Number of cases (2010)			48 804
Frequency (per 1,000 exposure)			11.66
Average duration (days) (2010)			44.1
Sum (Asd(x)) (2) (per 1,000 exposure)			224 329
Annual cost (1)			92
Annual salary bill (1)			88 346
Cost in per cent of salary bill			0.10
PDB			
Active persons (2010)	3 231 515	2 273 769	
Exposure to risk	2 455 951	1 728 064	
Number of cases (2010)	11 821	2 151	
Frequency (per 1,000 exposure)	4.81	1.24	
Average degree of PDB (2010)	9.06%	9.06%	
Sum (Asda(x)) (2) (per 1000 exposure)	936 149 464	626 302 913	
Annual cost (1)	368	64	
Ad hoc adjustment (3)	0.71	0.59	
Adjusted annual cost (1)	261	38	299
Annual salary bill (1)			88 346
Cost in per cent of salary bill			0.34
DB			
Active persons (2010)	3 231 515	2 273 769	
Exposure to risk	2 455 951	1 728 064	
Number of cases (2010)	1 000	77	
Frequency (per 1,000 exposure)	0.41	0.04	
Sum (Asdp(x)a(y)) (2) (per 1000 exposure)	739 368 905	520 781 211	
Sum (Asd(x)a(z)) (2) (per 1000 exposure)	638 088 411	426 524 166	
Annual cost (widows/ers) (1)	163	13	
Annual cost (orphans) (1)	94	7	
Ad hoc adjustment (3)	0.57	0.57	
Adjusted annual cost (widows/ers) (1)	93	7	100
Adjusted annual cost (orphans) (1)	53	4	57
Margin for secondary dependants (1)	53	4	57
Total cost	199	15	214
Annual salary bill (1)			88 346
Cost in per cent of salary bill			0.24

Notes: (1) All costs are in MYR million. (2) From Table 3.6B. (3) To allow for a downward bias in the average salary of benefit awardees in relation to the average salary of active persons.

Based on the above, the adjustment factors applied to the results of the formulae are 0.71 for male PDB awards, 0.59 for female PDB awards and 0.57 for DB awards. The following Table 3.8 summarizes the results of the prospective cost estimation for the major benefits, i.e. TDB, PDB and DB benefits, and incorporates the results of the retrospective analysis in respect of the other items of cost.

Table 3.8: **Prospective cost estimates** (per cent of salary bill)

Temporary Disablement benefit (TDB)	0.10
Permanent Disablement benefit (PDB)	0.34
Dependants' benefit	0.24
Other expenses *	0.04
Subtotal cost	0.72
Administration expenses *	0.15
Total cost	0.87

*Assumed on the basis of the recent experience in Table 3.4.

The result of the prospective cost estimation is 0.87 per cent, lower by 0.06 percentage points compared than the retrospective cost estimate of 0.93 per cent in 2010 in Table 3.6. This difference mainly comes from permanent disablement, temporary disablement and dependants' benefits.

7. Verification of the technical reserve on the valuation date

An independent computation of the technical reserve has been carried out on the basis of data on the number of PDB and dependants' beneficiaries on the valuation date and their pension amounts. The results are summarized below:

Table 3.9: **Verification of the technical reserve on valuation date** (31.12.2010)

	PDB				WIDOWS(ERS)				PARENTS			
	Number	Average pension p.m. (RM)	Actuarial Factor	Tech Res (RM '000)	Number	Average pension p.m. (RM)	Actuarial factor	Tech Res (RM '000)	Number	Average pension p.m. (RM)	Actuarial factor	Tech Res (RM '000)
15-19	192	150	8 973	8 596	14	394	9 756	1 794	41	195	9 756	2 602
20-24	407	248	8 530	28 753	69	617	9 346	13 272	4	102	9 346	127
25-29	1 199	289	8 029	92 659	377	659	8 893	73 595	2	286	8 893	169
30-34	1 791	333	7 479	148 561	768	657	8 387	141 047	0	0	8 387	0
35-39	2 300	345	6 876	181 885	1 164	599	7 817	181 676	18	228	7 817	1 069
40-44	2 434	348	6 221	175 401	1 438	577	7 189	198 754	212	183	7 189	9 292
45-49	2 436	345	5 538	155 056	1 547	632	6 509	212 182	832	218	6 509	39 264
50-54	2 185	345	4 880	122 563	1 571	676	5 796	205 187	1 577	258	5 796	78 633
55-59	1 883	345	4 238	91 787	1 356	638	5 056	145 827	1 985	284	5 056	95 009
60-64	1 259	339	3 637	51 687	1 001	581	4 341	84 147	1 806	294	4 341	76 749
65+	1 427	292	3 103	43 052	1 438	463	3 671	81 466	3 371	300	3 671	123 892
Total	17 513	331		1 100 001	10 743	603		1 338 947	9 848	279		426 807
	ORPHANS				SIBLINGS				GRAND TOTAL			
	15 013	350	2 566	449 061	3 997	141	1 540	28 998	57 114			3 343 814

Note 1: PDB pension amounts include constant attendance allowances.

Note 2: For orphans and siblings, the actuarial factor shown is an average, based on the age-distribution.

Source: Pensioners database

Table 3.10: Technical reserve required on 31 December 2010

Benefit item	Technical Reserve (MYR‘000)
Permanent disablement benefit	1 100 001
Widows (widowers) benefit	1 338 947
Orphans’ benefit	449 061
Parents’ benefit	426 807
Siblings’ benefit	28 998
Total	3 343 814

However, the technical reserve provided in the balance sheet (MYR3,846,564 in Table 2.4) exceeds the computed amount by about 15 per cent. The same phenomenon was observed at the eighth valuation. One reason for this apparent over-provision is the fact that, whereas the actuarial present value factors have built-in provision for regular indexation of pensions, such indexation is in fact done only at intervals, usually following recommendations in the actuarial valuation reports. Moreover, since the actuarial present value factors are constructed on an annual net interest basis of about 3 per cent, there were gains in those years in respect of which the difference between the yield on the technical reserve and the rate of pension adjustment (i.e., the rate of inflation) is greater than 3 per cent.

No adjustment is recommended, however, to the technical reserve shown in the balance sheet. The over-provision will help absorb the cost-of-living adjustments recommended in Section 9. Adopting the cost-of-living adjustments, the technical reserve required on 31 December 2010 (MYR3,453,400) is still about 11 per cent lower than the technical reserve provided in the balance sheet (MYR3,846,564 in Table 2.4).

8. Adjustment of pensions for the maintenance of their real value

The last pension adjustment was made following the recommendation in the eighth actuarial valuation report. This measure adjusted pensions awarded till the end of 2007 to the consumer price level of December 2008. Pensions awarded after the beginning of 2008 were not adjusted in the last pension adjustment.

In considering a further adjustment, it is necessary to judge if a substantial change in the cost of living has taken place since 2008. The evolution of the consumer price index since 2008 is shown in Table 3.11. The last column of the table shows the percentage increases in the cost-of-living from the pension award dates to December 2010, some of which are clearly “substantial”.

Table 3.11: Evolution of the Malaysia consumer price index (2005 = 100)

Pension award dates	Consumer price index (CPI)	Increase up to Dec. 2010 (%)
2008 (average)	111.4	3.7
December 2008	111.8	3.3
2009 (average)	112.1	3.0
2010 (average)	114.0	1.3
December 2010	115.5	

It is recommended to adjust pensions awarded till the end of 2010 in line with the CPI increase as follows:

Table 3.12: Adjustment of pensions awarded till the end of 2010

Pensions awarded before 2008	+3.3%
Pensions awarded in 2008	+3.7%
Pensions awarded in 2009	+3.0%
Pensions awarded in 2010	+1.3%

9. Actuarial present value factors

The actuarial present value factors contained in regulations 84 and 126 are used for the calculations of the technical reserve. They are also used for the purpose of commuting periodical payments into lump sums. The current factors were adopted in 1983 following the recommendation in the ILO report of the second actuarial review of SOCSO. The mortality table adopted higher mortality rates of the past than those of the current mortality table. An assumed annual interest rate is a nominal annual interest rate of 7.5 per cent per annum combined with an assumed annual inflation rate of 4.5 per cent per annum, implying a net annual interest rate of about 3 per cent per annum.

For illustration, actuarial present values have been recomputed based on the mortality rates of the 2008-2010 abridged life tables of Malaysia up to 80 years old and the Coale-Demeny West-pattern model life table more than 80 years old extended to 130 years old, a nominal annual interest rate of 4.55 per cent per annum and an annual inflation rate of 2.5 per cent per annum which are the average of the current actuarial valuation between the period of 2011 and 2050. Three alternatives are presented as regards the frequency of pension adjustment: (a) annual adjustment of pensions; (b) adjustment, once every three years; and (c) adjustment once every five years.

The following two facts should be borne in mind in considering whether the actuarial factors should be revised or not:

- in practice, pension adjustment does not take place annually, but only at intervals following actuarial valuations which have taken place at three- to five-year intervals;
- if annual adjustment factors are used without changing the frequency of the adjustments, those who commute pensions into lump sums are given the advantage of having higher amount, whereas those receiving periodic payments only benefit from adjustment at intervals.

Table 3.13: Actuarial present value factors

Age	Present factor	Annual pension adjustment		Three-yearly adjustment		Five-yearly adjustment	
		Revised factors (a)	Ratio to present factor	Revised factors (b)	Ratio to present factor	Revised factors (c)	Ratio to present factor
PDB factors							
17	8 973	10 624	1.18	10 386	1.16	10 203	1.14
22	8 530	10 165	1.19	9 933	1.16	9 758	1.14
27	8 029	9 651	1.20	9 423	1.17	9 258	1.15
32	7 479	9 080	1.21	8 859	1.18	8 705	1.16
37	6 876	8 453	1.23	8 239	1.20	8 097	1.18
42	6 221	7 761	1.25	7 554	1.21	7 425	1.19
47	5 538	7 012	1.27	6 816	1.23	6 702	1.21
52	4 880	6 219	1.27	6 035	1.24	5 936	1.22
57	4 238	5 382	1.27	5 212	1.23	5 128	1.21
62	3 637	4 538	1.25	4 388	1.21	4 320	1.19
Survivors" factors							
17	9 756	11 026	1.13	10 769	1.10	10 578	1.08
22	9 346	10 586	1.13	10 332	1.11	10 149	1.09
27	8 893	10 092	1.13	9 840	1.11	9 667	1.09
32	8 387	9 537	1.14	9 289	1.11	9 127	1.09
37	7 817	8 920	1.14	8 677	1.11	8 527	1.09
42	7 189	8 239	1.15	8 002	1.11	7 864	1.09
47	6 509	7 496	1.15	7 268	1.12	7 144	1.10
52	5 796	6 700	1.16	6 481	1.12	6 373	1.10
57	5 056	5 853	1.16	5 646	1.12	5 554	1.10
62	4 341	4 980	1.15	4 788	1.10	4 712	1.09
67	3 671	4 096	1.12	3 921	1.07	3 862	1.05
72	3 020	3 243	1.07	3 094	1.02	3 050	1.01
77	2 427	2 522	1.04	2 401	0.99	2 371	0.98
82	1 832	1 900	1.04	1 792	0.98	1 772	0.97
87	1 256	1 375	1.09	1 292	1.03	1 280	1.02
92	857	1 001	1.17	936	1.09	929	1.08
97	541	746	1.38	697	1.29	693	1.28

Basis of revised factors

Mortality rates based on Malaysia 2008-10 life table and Coale-Demeny West table extended up to 130 years old for those over 80 years old. No adjustment taken for possible higher mortality rates of PDB pensioners.

Mix ratio of males and females: based on the number of 2010 new pensioners.
Nominal annual interest rate: 4.55 per cent (average of the assumption from 2011 till 2050).
Annual pension adjustment (inflation): 2.5 per cent (average of the assumption from 2011 till 2050).

Taking into account the current unstable economic situation, it is recommended that the present factors should be maintained for the time being and that the revision should be made once the economic assumptions to be used should be made in a more stable economic environment. However, it is recommended that the revision of actuarial present value factors should be carried out if an annual automatic indexation is adopted as recommended in this report. This matter should again be reviewed at the next actuarial valuation.

Table 3.14 Demographic projections of employment injury benefits branch

Year	Active Persons	Numbers					In per cent of active persons (%)				
			dependents					Dependents			
		PDB	Widows (ers)	Orphans, second dep.	TDB	Total	PDB	Widows (ers)	Orphans, second dep.		Total
2010	5 505 284	10 554	10 752	28 858	55 056	105 220	0.19	0.20	0.52	1.00	1.91
2011	5 616 165	11 439	16 416	32 232	56 121	116 208	0.20	0.29	0.57	1.00	2.07
2012	5 727 021	12 321	22 050	43 897	57 212	135 479	0.22	0.39	0.77	1.00	2.37
2013	5 842 414	13 208	27 645	55 242	58 382	154 477	0.23	0.47	0.95	1.00	2.64
2014	5 952 099	14 100	33 202	66 112	59 520	172 935	0.24	0.56	1.11	1.00	2.91
2015	6 060 866	14 999	38 717	76 315	60 661	190 691	0.25	0.64	1.26	1.00	3.15
2016	6 168 243	15 902	44 182	85 698	61 784	207 566	0.26	0.72	1.39	1.00	3.37
2017	6 273 267	16 810	49 594	97 533	62 843	226 781	0.27	0.79	1.55	1.00	3.62
2018	6 374 531	17 724	54 952	108 420	63 814	244 910	0.28	0.86	1.70	1.00	3.84
2019	6 470 940	18 643	60 255	118 377	64 711	261 986	0.29	0.93	1.83	1.00	4.05
2020	6 561 221	19 566	65 509	127 463	65 553	278 090	0.30	1.00	1.94	1.00	4.24
2021	6 644 300	20 489	70 732	135 775	66 345	293 341	0.31	1.06	2.04	1.00	4.41
2022	6 719 551	21 413	75 933	143 387	67 111	307 844	0.32	1.13	2.13	1.00	4.58
2023	6 787 225	22 334	81 109	150 276	67 867	321 585	0.33	1.20	2.21	1.00	4.74
2024	6 847 867	23 251	86 258	156 384	68 603	334 495	0.34	1.26	2.28	1.00	4.88
2025	6 902 303	24 165	91 380	161 636	69 306	346 487	0.35	1.32	2.34	1.00	5.02
2026	6 951 568	25 077	96 478	165 951	69 995	357 501	0.36	1.39	2.39	1.01	5.14
2027	6 996 902	25 990	101 555	169 291	70 693	367 528	0.37	1.45	2.42	1.01	5.25
2028	7 039 761	26 905	106 615	171 712	71 435	376 666	0.38	1.51	2.44	1.01	5.35
2029	7 090 285	27 825	11 661	173 413	72 518	385 417	0.39	1.57	2.45	1.02	5.44
2030	7 151 208	28 747	116 695	174 642	74 039	394 124	0.40	1.63	2.44	1.04	5.51
2031	7 217 965	29 675	121 714	175 638	75 133	402 161	0.41	1.69	2.43	1.04	5.57
2032	7 291 974	30 612	126 714	176 450	76 231	410 008	0.42	1.74	2.42	1.05	5.62
2033	7 381 124	31 560	131 690	177 197	77 327	417 775	0.43	1.78	2.40	1.05	5.66
2034	7 479 753	32 518	136 636	177 844	78 416	425 415	0.43	1.83	2.38	1.05	5.69
2035	7 593 061	33 485	141 546	178 362	79 495	432 889	0.44	1.86	2.35	1.05	5.70
2036	7 705 418	34 457	146 414	178 722	80 625	440 219	0.45	1.90	2.32	1.05	5.71
2037	7 821 588	35 428	151 229	178 883	81 735	447 275	0.45	1.93	2.29	1.04	5.72
2038	7 941 038	36 393	155 978	178 799	82 830	454 000	0.46	1.96	2.25	1.04	5.72
2039	8 067 753	37 348	160 647	178 449	83 922	460 366	0.46	1.99	2.21	1.04	5.71
2040	8 200 452	38 293	165 235	177 874	85 022	466 424	0.47	2.01	2.17	1.04	5.69
2041	8 323 910	39 215	169 759	177 176	86 102	472 252	0.47	2.04	2.13	1.03	5.67
2042	8 452 486	40 132	174 223	176 435	87 205	477 995	0.47	2.06	2.09	1.03	5.66
2043	8 583 741	41 044	178 620	175 696	88 325	483 685	0.48	2.08	2.05	1.03	5.63
2044	8 715 621	41 953	182 944	174 996	89 453	489 346	0.48	2.10	2.01	1.03	5.61
2045	8 848 217	42 859	187 189	174 356	90 581	494 984	0.48	2.12	1.97	1.02	5.59
2046	8 969 960	43 755	191 349	173 795	91 698	500 597	0.49	2.13	1.94	1.02	5.58
2047	9 089 926	44 652	195 417	173 329	92 821	506 219	0.49	2.15	1.91	1.02	5.57
2048	9 205 898	45 551	199 387	172 985	93 949	511 872	0.49	2.17	1.88	1.02	5.56
2049	9 320 504	46 453	203 251	172 808	95 078	517 590	0.50	2.18	1.85	1.02	5.55
2050	9 431 750	47 358	207 004	172 831	96 210	523 403	0.50	2.19	1.83	1.02	5.55

Table 3.15 Financial projections of employment injury benefits branch

Year	Insured Sal Bill	Amounts (RM million)					PAYG cost rate (%)				
		PDB	Dependents: Widows (ers)	Dependents: Orphans, second dep.	TDB	Total	PDB	Dependents: Widows (ers)	Dependents: Orphans, second dep.	TDB	Total
2010	88 938	351	78	103	106	637	0.39	0.09	0.12	0.12	0.72
2011	95 302	363	102	95	112	673	0.38	0.11	0.10	0.12	0.71
2012	102 112	376	128	117	117	739	0.37	0.13	0.11	0.11	0.72
2013	109 474	390	155	140	124	808	0.36	0.14	0.13	0.11	0.74
2014	117 224	404	184	163	130	881	0.34	0.16	0.14	0.11	0.75
2015	125 475	419	215	187	136	957	0.33	0.17	0.15	0.11	0.76
2016	134 247	435	247	211	143	1 035	0.32	0.18	0.16	0.11	0.77
2017	143 564	451	281	248	150	1 130	0.31	0.20	0.17	0.10	0.79
2018	153 434	468	317	286	157	1 228	0.31	0.21	0.19	0.10	0.80
2019	163 844	487	355	323	164	1 329	0.30	0.22	0.20	0.10	0.81
2020	174 767	506	395	361	171	1 433	0.29	0.23	0.21	0.10	0.82
2021	186 178	526	437	399	179	1 541	0.28	0.23	0.21	0.10	0.83
2022	198 055	547	482	437	186	1 653	0.28	0.24	0.22	0.09	0.83
2023	210 378	569	529	476	193	1 768	0.27	0.25	0.23	0.09	0.84
2024	223 136	593	580	515	201	1 888	0.27	0.26	0.23	0.09	0.85
2025	236 331	617	633	553	213	2 017	0.26	0.27	0.23	0.09	0.85
2026	249 969	643	689	591	226	2 150	0.26	0.28	0.24	0.09	0.86
2027	264 063	670	748	629	240	2 287	0.25	0.28	0.24	0.09	0.87
2028	278 630	699	811	666	254	2 430	0.25	0.29	0.24	0.09	0.87
2029	293 812	729	877	703	270	2 579	0.25	0.30	0.24	0.09	0.88
2030	309 634	761	947	741	287	2 736	0.25	0.31	0.24	0.09	0.88
2031	326 465	795	1 021	780	304	2 900	0.24	0.31	0.24	0.09	0.89
2032	344 090	830	1 099	821	322	3 072	0.24	0.32	0.24	0.09	0.89
2033	362 804	868	1 181	863	341	3 253	0.24	0.33	0.24	0.09	0.90
2034	382 431	908	1 268	907	360	3 443	0.24	0.33	0.24	0.09	0.90
2035	403 184	950	1 359	952	380	3 640	0.24	0.34	0.24	0.09	0.90
2036	425 786	994	1 454	997	402	3 847	0.23	0.34	0.23	0.09	0.90
2037	449 427	1 041	1 554	1 043	424	4 062	0.23	0.35	0.23	0.09	0.90
2038	474 162	1 090	1 658	1 089	447	4 284	0.23	0.35	0.23	0.09	0.90
2039	500 371	1 141	1 767	1 135	471	4 514	0.23	0.35	0.23	0.09	0.90
2040	528 094	1 194	1 881	1 181	496	4 751	0.23	0.36	0.22	0.09	0.90
2041	557 243	1 249	1 999	1 227	522	4 997	0.22	0.36	0.22	0.09	0.90
2042	588 740	1 307	2 123	1 274	550	5 254	0.22	0.36	0.22	0.09	0.89
2043	621 972	1 367	2 252	1 322	579	5 521	0.22	0.36	0.21	0.09	0.89
2044	656 908	1 431	2 386	1 372	609	5 799	0.22	0.36	0.21	0.09	0.88
2045	693 642	1 498	2 527	1 424	641	6 090	0.22	0.36	0.21	0.09	0.88
2046	731 352	1 568	2 673	1 478	675	6 394	0.21	0.37	0.20	0.09	0.87
2047	770 715	1 642	2 825	1 535	710	6 711	0.21	0.37	0.20	0.09	0.87
2048	811 513	1 719	2 984	1 594	746	7 043	0.21	0.37	0.20	0.09	0.87
2049	854 004	1 800	3 148	1 657	784	7 390	0.21	0.37	0.19	0.09	0.87
2050	898 001	1 886	3 319	1 723	824	7 752	0.21	0.37	0.19	0.09	0.86

Table 3.16 Financial projections of employment injury benefits branch: minimum rate increased to

Year	Insured Sal Bill	Amounts (MYR million)					PAYG cost rate (%)				
			Dependents					Dependents			
		PDB	Widows (ers)	Orphans, second dep.	TDB	Total	PDB	Widows (ers)	Orphans, second dep.	TDB	Total
2010	88 938	351	78	103	106	637	0.39	0.09	0.12	0.12	0.72
2011	95 302	363	102	95	112	673	0.38	0.11	0.10	0.12	0.71
2012	102 112	376	128	117	117	739	0.37	0.13	0.11	0.11	0.72
2013	109 474	390	158	144	128	820	0.36	0.14	0.13	0.12	0.75
2014	117 224	405	193	175	135	908	0.35	0.16	0.15	0.11	0.77
2015	125 475	421	230	208	141	1 000	0.34	0.18	0.17	0.11	0.80
2016	134 247	438	268	241	148	1 095	0.33	0.20	0.18	0.11	0.82
2017	143 564	455	309	288	156	1 208	0.32	0.22	0.20	0.11	0.84
2018	153 434	474	353	335	163	1 324	0.31	0.23	0.22	0.11	0.86
2019	163 844	494	399	382	170	1 444	0.30	0.24	0.23	0.10	0.88
2020	174 767	514	447	430	177	1 568	0.29	0.26	0.25	0.10	0.90
2021	186 178	536	498	478	185	1 696	0.29	0.27	0.26	0.10	0.91
2022	198 055	559	552	526	192	1 830	0.28	0.28	0.27	0.10	0.92
2023	210 378	583	610	575	200	1 968	0.28	0.29	0.27	0.09	0.94
2024	223 136	609	670	625	207	2 111	0.27	0.30	0.28	0.09	0.95
2025	236 331	635	734	674	220	2 264	0.27	0.31	0.29	0.09	0.96
2026	249 969	664	802	723	233	2 422	0.27	0.32	0.29	0.09	0.97
2027	264 063	693	874	772	247	2 586	0.26	0.33	0.29	0.09	0.98
2028	278 630	725	949	820	262	2 756	0.26	0.34	0.29	0.09	0.99
2029	293 812	758	1 029	868	279	2 934	0.26	0.35	0.30	0.09	1.00
2030	309 634	793	1 113	917	298	3 121	0.26	0.36	0.30	0.10	1.01
2031	326 465	830	1 202	966	316	3 314	0.25	0.37	0.30	0.10	1.02
2032	344 090	869	1 295	1 017	334	3 515	0.25	0.38	0.30	0.10	1.02
2033	362 804	911	1 394	1 068	354	3 726	0.25	0.38	0.29	0.10	1.03
2034	382 431	955	1 497	1 120	374	3 946	0.25	0.39	0.29	0.10	1.03
2035	403 184	1 002	1 606	1 174	395	4 176	0.25	0.40	0.29	0.10	1.04
2036	425 786	1 051	1 720	1 229	417	4 417	0.25	0.40	0.29	0.10	1.04
2037	449 427	1 103	1 839	1 285	440	4 667	0.25	0.41	0.29	0.10	1.04
2038	474 162	1 157	1 964	1 340	464	4 926	0.24	0.41	0.28	0.10	1.04
2039	500 371	1 214	2 094	1 396	489	5 193	0.24	0.42	0.28	0.10	1.04
2040	528 094	1 274	2 230	1 451	515	5 470	0.24	0.42	0.27	0.10	1.04
2041	557 243	1 336	2 371	1 508	542	5 757	0.24	0.43	0.27	0.10	1.03
2042	588 740	1 401	2 519	1 565	571	6 056	0.24	0.43	0.27	0.10	1.03
2043	621 972	1 469	2 674	1 625	601	6 368	0.24	0.43	0.26	0.10	1.02
2044	656 908	1 541	2 835	1 686	632	6 694	0.23	0.43	0.26	0.10	1.02
2045	693 642	1 616	3 003	1 750	665	7 034	0.23	0.43	0.25	0.10	1.01
2046	731 352	1 694	3 178	1 817	699	7 389	0.23	0.43	0.25	0.10	1.01
2047	770 715	1 777	3 360	1 887	736	7 760	0.23	0.44	0.24	0.10	1.01
2048	811 513	1 864	3 549	1 960	773	8 147	0.23	0.44	0.24	0.10	1.00
2049	854 004	1 956	3 746	2 038	813	8 553	0.23	0.44	0.24	0.10	1.00
2050	898 001	2 051	3 951	2 120	854	8 976	0.23	0.44	0.24	0.10	1.00

10. Conclusions and recommendations

(1) The overall financial situation of the employment injury branch, as of 31 December 2010 was sound. Since the eighth valuation, the cost of the scheme has been contained within the current contribution rate of 1.25 per cent of insured wages. The technical reserve provided in the balance sheet adequately covers the pension liabilities on the valuation date, the contingency reserve has been provided at the level required and a substantial free reserve has accumulated.

(2) Taking into account the increase in the cost of living since 2008, it is recommended that permanent disablement benefits and dependants' benefits payment should be adjusted to compensate for the loss in purchasing power since the last adjustment or since the date of award. The proposed adjustment rates are as follows:

Pensions awarded before 2008	+3.3%
Pensions awarded in 2008	+3.7%
Pensions awarded in 2009	+3.0%
Pensions awarded in 2010	+1.3%

The cost of these adjustments will be covered by the excess provision in the technical reserve.

(3) A review of the actuarial present value factors has concluded that the factors should be maintained for the time being. This question should be reviewed at the next valuation.

(4) It is recommended that the current contribution rate of 1.25 per cent of insured salaries should be maintained. The frequencies of reported accidents substantially decreased in 2010 compared to those of 2006 while the average duration of the temporary injury benefits and the frequencies of pension benefits increased. The gap between the current contribution rate and the necessary cost rate has recently narrowed as improvements of the benefits were effected in 2009 and 2010. It is necessary to watch closely to see whether this kind of trend continues in the near future. The contribution rate should be again assessed at the next actuarial valuation based on the future observations.

IV. Valuation of invalidity and survivors' benefits

1. Introduction

The first step of the valuation is to analyse the past experience of Invalidity and survivors' benefits for setting the actuarial basis of the valuation.

The second step is to carry out projections, starting from the valuation date and based on the newly established actuarial basis. Based on these projections, an indication is given of the years when increases in the contribution rate will probably be required. This approach is consistent with the partially funded scaled premium (SP) financial system which is applied to these benefits.

2. The financial system for invalidity and survivors' benefits

These benefits are long-term benefits, awarded mainly in the form of pensions which continue in payment throughout the lifetime of the beneficiary (i.e., an invalidity or survivor pensioner) or during a specified status (e.g. an orphan being under the age of 21). Total annual benefit expenditure in the percentage of the insured salary bill is expected to increase continuously over a long period of time until the scheme reaches maturity. Any significant changes in the scheme, such as expansion of coverage or changes in the benefit formula will extend the scheme maturating process.

In view of the above, there is a variety of possible financial systems for a social security pension scheme, from pay-as-you-go (PAYG) at one extreme to the general average premium system (GAP) at the other. PAYG cost rates continuously increases with practically no reserves. The GAP contribution rate is a flat contribution rate with an accumulation of substantial reserves.

In practice, many social security pension schemes apply an intermediate partially funded system where the contribution rate falls between the PAYG contribution rate and the GAP rate. One of the systems is the terminal funding system (TFS) or the assessment of constituent capitals system which is being applied to PDB and dependents' benefits under the employment injury benefits branch. The TFS is a funding system so that the future full cost of new benefits during the year, i.e. the capitalized present value of new benefits, should be covered by the contributions of that year. In consequence, the accumulated reserve fund together with future investment earnings should fully cover the future cost of pensions already in payment. The TFS system for long-term employment injury benefits is adopted in several countries since it is considered appropriate to make full provision for compensations of industrial injuries or occupational diseases at the time of occurrence. The rate of pension is a fixed percentage of the wage regardless of the contributory period of the individual.

In contrast, SOCSO invalidity and survivors' benefits pension formula is proportional to the contributory period within maximum and minimum limits on the replacement rate. In most countries, invalidity and survivors' pensions form a part of a composite scheme including old-age pensions. The general financing practice is to adopt a partially funded system with flat contribution rates over successive intervals to meet a target reserve condition. This financial system is called the scaled premium system (SP).

A variant reserve condition of this system is that the reserve should increase over each interval, reaching a plateau at the end of the interval. The reserve fund would start to decrease if the same contribution rate continued beyond the interval. This variant is applied in several developing countries. Although the scheme intends to use the investment return on funds for benefit payments, it does not use the reserve itself to meet expenditure. This enables the reserves to be invested in long-term assets. The previous actuarial valuations of the invalidity and survivors' benefits branch have been performed on the basis of the scaled premium system. It was also adopted in the present valuation.

3. Analysis of the relative cost experience

Table 4.1 analyses the relative cost experience of Invalidity and Survivors' Benefits Branch over the period of 2006-2010. The table shows the absolute amounts of expenditure drawn from the published income and expenditure accounts and the PAYG cost of expenditure.

It is noted that the total PAYG cost has grown from about 0.90 per cent to 1.28 per cent over the period. This trend indicates the maturing process of the scheme.

Table 4.1 Relative cost analysis for invalidity pension branch

Item	2006	2007	2008	2009	2010
Amounts (MYR million)					
Invalidity benefit	206.8	224.3	243.4	266.9	345.6
Survivors' benefit	316.1	356.5	399.0	449.2	581.5
Funeral benefit	8.7	9.4	10.6	11.7	11.7
Other liability expenses	44.3	46.1	61.4	94.5	106.8
Total benefit expenditure	575.9	636.3	714.4	822.3	1 045.6
Administration	65.3	74.4	85.3	85.8	107.5
Total expenditure	641.3	710.8	799.7	908.1	1 153.1
Estimated Insured salary bill	71 377	76 031	82 560	84 022	90 354
Relative cost as a percentage of insured salary bill (%)					
Invalidity benefit	0.29	0.30	0.29	0.32	0.38
Survivors' benefit	0.44	0.47	0.48	0.53	0.64
Funeral benefit	0.01	0.01	0.01	0.01	0.01
Other liability expenses	0.06	0.06	0.07	0.11	0.12
Total	0.81	0.84	0.87	0.98	1.16
Administration	0.09	0.10	0.10	0.10	0.12
Total expenditure	0.90	0.93	0.97	1.08	1.28

Source: SOCSO Accounts Statements and attached notes to the accounts

4. Analysis of the frequency experience

Table 4.2 shows the sex/age distribution of invalidity and survivors' benefit cases for the period of 2008-10. Although there is some fluctuation from year to year in the age distribution, it is appreciably lower than the fluctuation in the age distribution of permanent disablement and dependants' benefit cases in Table 3.6A.

Table 4.2 Sex / age analysis of invalidity and survivors' benefit cases

	Invalidity			% of Total			Survivors			% of Total		
	2008	2009	2010	2008	2009	2010	2007	2008	2009	2007	2008	2009
Male												
15-19	0	1	0	0	0	0	10	19	25	0	0	0
20-24	21	24	15	1	1	4	184	192	206	4	4	4
25-29	53	88	59	3	4	7	322	354	402	7	7	7
30-34	128	132	108	7	6	8	413	486	487	9	9	8
35-39	181	235	217	10	10	11	553	652	663	12	12	11
40-44	236	363	315	13	16	16	680	856	935	15	16	16
45-49	432	534	530	23	23	20	974	1 119	1 181	21	21	20
50-54	774	888	829	42	38	24	1 149	1 276	1 393	25	23	24
55-59	31	61	343	2	3	4	215	254	255	5	5	4
60-64	2	4	8	0	0	2	106	147	139	2	3	2
65+	0	0	1	0	0	2	72	79	99	2	1	2
Total M	1 858	2 330	2 425	100	100	100	4 678	5 434	5 785	100	100	100
Female												
15-19	2	1	0	0	0	0	3	5	5	0	0	0
20-24	7	14	11	1	1	5	63	58	75	5	4	5
25-29	43	47	29	4	3	9	34	153	142	3	11	9
30-34	74	94	86	7	7	13	74	162	214	6	12	13
35-39	135	126	132	13	9	13	174	194	220	15	14	13
40-44	179	236	184	17	17	17	229	229	286	19	16	17
45-49	248	346	314	23	25	19	277	273	305	23	20	19
50-54	354	469	426	33	35	18	248	232	293	21	17	18
55-59	18	24	133	2	2	3	47	52	48	4	4	3
60-64	0	0	4	0	0	2	23	18	34	2	1	2
65+	0	0	0	0	0	1	16	18	24	1	1	1
Total F	1 060	1 357	1 319	100	100	100	1 188	1 394	1 646	100	100	100

Source: SOCSO database

Analysis of the invalidity benefit frequency

Table 4.3 illustrates the computation of the invalidity frequency (pensions and grants) experience under the scheme in the year 2010 by sex and age group. The number of awards in 2010 was divided into the estimated 2010 active population to obtain the average frequency in each age group. The resulting frequencies were smoothed and interpolated upon to obtain the invalidity frequencies by single ages. These frequencies have been used as inputs for the ninth valuation projections.

Table 4.3 Derivation of invalidity rates based on 2010 experience

	Males			Females		
	Active Population ('000) [1]	Invalidity benefit awards [2]	Invalidity rate [3]	Active Population ('000) [4]	Invalidity benefit awards [5]	Invalidity rate [6]
15-19	197	0	0.000000	140	0	0.000000
20-24	558	15	0.000027	463	11	0.000024
25-29	590	59	0.000100	486	29	0.000060
30-34	472	108	0.000229	352	86	0.000245
35-39	393	217	0.000552	269	132	0.000491
40-44	336	315	0.000937	209	184	0.000879
45-49	277	530	0.001911	170	314	0.001843
50-54	206	829	0.004023	112	426	0.003803
Total	3 031	2 073	0.000684	2 200	1 182	0.000537

Note: Invalidity rates are calculated by the ratio of Invalidity pension awards (column 2 and 6) to Active population (column 1,4).
Source: SOCSO database

Analysis of the survivors' benefit frequency

Table 4.4 provides an analysis of the 2010 survivors' benefit frequency experience. It applies the general population mortality rates (including an adjustment for the presumed higher mortality of invalids) to the active and invalid populations of 2010 and compares the results with the actual number of 2010 awards of survivors' benefits. It is seen that, on the whole, the actual cases were about 86 per cent of the expected deaths for males and about 87 per cent in the case of females. This experience will be taken into account in selecting the assumptions concerning the award rates of survivors' benefit, for the purposes of the projections.

Table 4.4 Analysis of the survivors' benefit awards experience in 2010

	Active Population ('000) (1)	Assumed mortality rate per 1000 (2)	Expected Number of awards from insured population (3) = (1)*(2)	Invalid Population (4)	Assumed mortality rate per 1000 (5)	Expected Number of awards from invalidity pensioners (6)=(4)*(5)	Total expected awards (7)=(3)+(6)	Actual Number of Awards (8)
Males								
15-19	197	1.00	197	1	2.65	0	197	25
20-24	558	1.40	781	30	3.28	0	781	206
25-29	590	1.60	945	268	3.54	1	946	402
30-34	472	2.10	991	645	4.19	3	994	487
35-39	393	2.60	1 023	991	5.48	5	1 028	663
40-44	336	3.40	1 143	1 556	7.41	12	1 155	935
45-49	277	5.00	1 387	2 628	10.02	26	1 413	1 181
50-54	206	7.70	1 587	4 055	13.09	53	1 640	1 393
55-59				5 002	15.99	80	80	255
60+				4 198	20.68	87	87	139
Total	3 031		8 054	19 374		267	8 321	5 686
Females								
15-19	140	0.40	56	1	1.45	0	56	5
20-24	463	0.40	185	20	2.19	0	185	75
25-29	486	0.50	243	154	2.36	0	243	142
30-34	352	0.70	246	426	2.97	1	247	214
35-39	269	1.00	269	704	3.81	3	271	220
40-44	209	1.60	335	1 353	4.94	7	341	286
45-49	170	2.60	443	2 433	6.58	16	459	305
50-54	112	4.30	482	3 522	8.30	29	511	293
55-59				3 920	9.99	39	39	48
60+				3 501	12.68	44	44	34
Total	2 200		2 258	16 033		140	2 398	1 622

Note: The mortality rates for invalid population are those assumed at the Seventh valuation.
The active population is the final adjusted figure adopted for the valuation.
Actual numbers are drawn from the relevant table of the 2010 SOCSO Annual Report.
Source: The mortality rates for active population are 2008 mortality rates of Department of Statistics.

Table 4.5 indicates the numbers of the different categories of beneficiaries, corresponding to the 2010 awards of survivors' benefits and the average monthly amounts of the respective pension.

Table 4.5 Invalidity and survivors' pensions awarded in 2010 (numbers, monthly amounts and average amount)

INVALIDS						
Age	Females			Males		
	Numbers	Amount	Average	Numbers	Amount	Average
15-19	0	0	0	0	0	0
20-24	15	8 312	554	11	4 695	427
25-29	59	35 559	603	29	16 508	569
30-34	108	75 730	701	86	50 949	592
35-39	217	191 959	885	132	98 372	745
40-44	315	294 621	935	184	119 359	649
45-49	530	531 423	1 003	314	209 621	668
50-54	829	864 501	1 043	426	317 319	745
55-59	343	374 470	1 092	133	91 772	690
60-64	8	8 772	1 096	4	3 134	783
65+	1	660	660	0	0	0
TOTALS	2 425	2 386 007	984	1 319	911 729	691
WIDOWS/WINDOWERS						
Age	Widows			Widowers		
	Numbers	Amount	Average	Numbers	Amount	Average
15-19	4	902	225	0	0	0
20-24	38	13 296	350	8	2 337	292
25-29	225	92 574	411	34	9 000	265
30-34	413	154 217	373	84	33 163	395
35-39	609	226 090	371	120	40 344	336
40-44	781	279 567	358	133	42 564	320
45-49	958	406 615	424	161	54 344	338
50-54	699	322 589	462	189	69 839	370
55-59	274	127 087	464	146	54 212	371
60-64	124	56 375	455	71	26 666	376
65+	38	11 947	314	58	15 818	273
TOTALS	4 163	1 691 260	406	1 004	348 287	347
PARENTS						
Age	Mothers			Fathers		
	Numbers	Amount	Average	Numbers	Amount	Average
15-19	1	292	292	0	0	0
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	0	0	0	0	0	0
35-39	2	420	210	0	0	0
40-44	28	3 047	109	3	313	104
45-49	126	15 987	127	32	3 383	106
50-54	200	30 452	152	124	14 711	119
55-59	181	32 358	179	142	20 226	142
60-64	173	32 450	188	140	19 840	142
65+	309	83 524	270	265	50 219	190
TOTALS	1 020	198 530	195	706	108 692	154

ORPHANS AND SIBLINGS						
Age	Orphans			Other dependents		
	Numbers	Amount	Average	Numbers	Amount	Average
0-19	10 383	2 170 166	209	515	43 674	85
20-24	648	156 473	241	99	10 514	106
25-29	10	1 845	185	0	0	0
30-34	6	2 079	346	0	0	0
35-39	2	812	406	0	0	0
40-44	3	666	222	0	0	0
45-49	0	0	0	0	0	0
50-54	1	208	208	0	0	0
55-59	0	0	0	0	0	0
60-64	0	0	0	0	0	0
65+	0	0	0	0	0	0
TOTALS	11 053	2 332 250	211	614	54 188	88

Source: SOCSO database

5. Analysis of the rates of awarded pensions

Table 4.6 lists pensioners existing on the valuation date of 31 December 2010 by sex, age group and category of beneficiary. The table also shows the corresponding average monthly pension amounts. These amounts include the last pension adjustments, as well as the constant attendance allowances for some of the invalidity pensions.

Table 4.7 shows an analysis of new invalidity pensions awarded in 2010 by wage class.

Table 4.6 Invalidity and survivor pensions in payment on 31.12.2010 (numbers and monthly amounts)

INVALIDS						
Age	Males			Females		
	Numbers	Amount	Average	Numbers	Amount	Average
15-19	1	737	625	1	527	447
20-24	28	18 370	649	19	9 357	496
25-29	255	175 401	688	146	86 281	590
30-34	615	481 853	784	406	261 167	644
35-39	944	871 951	924	670	465 380	695
40-44	1 482	1 431 949	966	1 288	912 074	708
45-49	2 502	2 571 999	1 028	2 317	1 611 149	695
50-54	3 861	4 256 173	1 102	3 354	2 266 386	676
55-59	4 764	5 243 698	1 101	3 733	2 240 733	600
60-64	2 601	2 693 374	1 035	1 902	985 113	518
65+	1 397	1 019 565	730	1 432	643 281	449
TOTAL	18 449	18 765 070	1 017	15 267	9 481 448	621

Note: Amounts include constant attendance allowances.
Source: SOCSO database

WIDOWS/WIDOWERS						
Age	Widows			Widowers		
	Numbers	Amount	Average	Numbers	Amount	Average
15-19	18	4 297	239	2	372	186
20-24	120	38 647	322	12	3 143	0
25-29	833	313 672	377	93	26 782	288
30-34	2 407	851 659	354	314	106 232	338
35-39	4 470	1 522 544	341	515	166 398	323
40-44	6 644	2 223 337	335	665	205 750	309
45-49	9 794	3 677 569	375	794	256 720	323
50-54	11 464	4 707 068	411	945	335 597	355
55-59	9 353	3 870 285	414	824	304 016	369
60-64	5 991	2 229 861	372	558	182 514	327
65+	3 876	1 210 345	312	728	187 403	257
TOTALS	54 970	20 649 283	376	5 450	1 774 926	326
PARENTS						
Age	Mothers			Fathers		
	Numbers	Amount	Average	Numbers	Amount	Average
15-19	50	9 653	193	37	5 661	153
20-24	7	426	61	5	349	70
25-29	3	127	0	2	125	0
30-34	0	0	0	0	0	0
35-39	4	641	160	0	0	0
40-44	84	8 706	104	4	402	101
45-49	522	66 489	127	99	9 665	98
50-54	1 472	219 181	149	462	50 550	109
55-59	2 136	365 390	171	777	93 072	120
60-64	2 255	418 422	186	1 027	142 941	139
65+	5 359	1 206 775	225	2 923	491 376	168
TOTALS	11 892	2 295 809	193	5 336	794 141	149
ORPHANS AND SIBLINGS						
Age	Orphans			Siblings		
	Numbers	Amount	Average	Numbers	Amount	Average
0-19	80 217	16 131 075	201	3 059	260 837	85
20-24	9 573	2 196 429	229	712	72 934	102
25-29	259	58 759	227	7	883	126
30-34	163	39 419	242	4	552	138
35-39	102	25 944	254	0	0	0
40-44	56	11 263	201	0	0	0
45-49	39	8 016	206	0	0	0
50-54	11	2 114	192	0	0	0
55-59	5	848	0	1	155	155
60-64	0	0	0	0	0	0
65+	0	0	0	5	765	153
TOTALS	90 425	18 473 867	204	3 788	336 127	89

Table 4.7 Invalidity pension awards by wage class of award in 2010

Wage-class	Assumed wage p.m.	2010 (numbers)		2010 (per cent)	
		Males	Females	Males	Females
1	30	0	0	0	0
2	40	0	0	0	0
3	60	0	0	0	0
4	85	0	0	0	0
5	120	0	0	0	0
6	170	0	0	0	0
7	250	0	0	0	0
8	350	0	0	0	0
9	450	128	207	5	16
10	550	94	122	4	9
11	650	125	120	5	9
12	750	135	121	6	9
13	850	123	96	5	7
14	950	118	84	5	6
15	1 050	101	62	4	5
16	1 150	105	52	4	4
17	1 250	80	64	3	5
18	1 350	103	37	4	3
19	1 450	97	40	4	3
20	1 550	77	34	3	3
21	1 650	88	20	4	2
22	1 750	82	21	3	2
23	1 850	72	31	3	2
24	1 950	119	31	5	2
25	2 050	64	19	3	1
26	2 150	59	9	2	1
27	2 250	43	16	2	1
28	2 350	48	11	2	1
29	2 450	59	21	2	2
30	2 550	52	14	2	1
31	2 650	50	7	2	1
32	2 750	37	14	2	1
33	2 850	80	12	3	1
34	2 950	286	54	12	4
Total		2 425	1 319	100	100

Source: SOCSO database

6. The actuarial basis for the projections

Taking into account the results of the experience analysis in sections 3, 4 and 5 above, the following assumptions have been retained for the ninth valuation projections.

Mortality rates and adjustments to derive the survivor benefit awards

The following data on the expectancy of life at birth drawn from life tables published by the Department of Statistics give an indication of the reduction in mortality in recent years.

year	Male	Female
1990	68.9	73.5
1996	69.5	74.3
1997	69.7	74.5
1998	69.5	74.3
1999	69.7	74.4
2000	70.0	74.7
2001	70.6	75.1
2002	70.8	75.3
2003	70.9	75.6
2004	71.1	75.9
2005	71.4	76.2
2006	71.5	76.3
2007	71.5	76.3
2008	71.6p	76.4p
2009	71.7p	76.5p
2010	71.7e	76.6e

Notes:
p : Preliminary
e : Estimates
Source: Department of statistics

The national mortality rates for the ninth valuation projections were assumed to be consistent with the mortality rates of the official population projections since there was no basis to determine SOCSO-specific mortality rates although SOCSO-insured persons may have lower mortality rates than the whole Malaysian population. A comparison of the 2006 awards of survivors' benefit with the expected number of deaths in Table 4.4 indicates that the awards represented 86 per cent and 87 per cent of the expected deaths of males and females respectively However, these awards cannot be taken as indicating the actual number of deaths either since they exclude death cases where the qualifying conditions were not satisfied or where there were no surviving dependents.

In summary, the national mortality rates were retained for the projections and the number of survivor benefit awards was estimated by applying a proportion to the number of deaths generated by the projections.

Invalidity rates

SOCSO's own experience was used to derive appropriate invalidity rates in Table 4.9.

Table 4.9 Assumed mortality rates and invalidity rates

Age	Mortality rates (per 10,000)						Invalidity rates (per 10,000)
	2002	2012	2022	2032	2042	2050	
Males							
17	5	4	3	4	5	4	0.1
22	7	5	4	7	9	8	0.5
27	9	6	5	8	10	10	1.8
32	12	8	6	8	9	9	3.1
37	17	13	10	11	11	11	6.9
42	27	21	16	17	18	17	13.7
47	45	35	28	28	28	26	26.9
52	74	60	48	49	50	48	66.7
57	123	101	84	77	72	66	
67	334	290	252	212	181	163	
77	878	802	730	621	539	501	
87	2 116	2 029	1 937	1 665	1 478	1 430	
97	4 279	4 265	4 228	3 617	3 215	3 178	
Females							
17	3	4	3	3	2	2	0.1
22	5	5	4	3	3	3	0.3
27	6	5	5	4	4	4	1.2
32	8	7	6	5	5	4	3.3
37	13	10	9	7	7	6	5.7
42	19	15	13	12	10	9	13.2
47	31	25	21	18	16	15	28.9
52	49	39	33	28	26	24	75.0
57	78	59	49	42	37	34	
67	204	156	128	107	93	82	
77	537	491	424	364	325	294	
87	1 333	1 387	1 305	1 205	1 132	1 073	
97	2 920	3 194	3 077	2 942	2 861	2 797	

Source: SOCSO database

Family characteristics

The age-wise family characteristics, required for projecting the primary beneficiaries of survivors' benefit, are: (a) the proportion with a living spouse; (b) the average age of the spouse; (c) the average number of children; and (d) the average age of the children. These were adopted from the previous valuation as seen in Table 4.10. The cost of benefits to secondary dependents, namely parents and siblings, was estimated in the projections by adding an overall margin to the projections for primary dependents based on Tables 4.5 and 4.6.

Table 4.10 Family characteristics assumed for the projections

Age of insured person	Male insured persons				Female insured persons			
	Proportion with a living spouse	Average age of spouse	Average no. of children per head	Average age of the children	Proportion with a living spouse	Average age of spouse	Average no of children per head	Average age of the children
17	0,01	17	0,01	0	0,07	17	0,09	0
22	0,04	21	0,28	1	0,39	24	0,69	1
27	0,50	24	1,18	2	0,72	31	1,90	3
32	0,79	28	2,01	3	0,85	37	2,42	6
37	0,89	32	2,42	4	0,88	43	2,42	6
42	0,92	36	2,42	6	0,87	49	2,25	9
47	0,94	40	2,32	9	0,85	56	1,99	11
52	0,94	44	2,15	11	0,79	63	1,64	12
57	0,93	48	1,92	12	0,71	67	0,95	13
62	0,90	52	1,64	13	0,58	72	0,52	14
67	0,78	57	0,95	14	0,45	77	0,09	16
72	0,65	62	0,52	15	0,32	82	0,00	18
77	0,53	67	0,07	18	0,19	87	0,00	20
82	0,40	72	0,00	20	0,06	92	0,00	21
87	0,28	77	0,00	21	0,00	97	0,00	21
92	0,15	82	0,00	21	0,00	102	0,00	21

Source: Eighth actuarial valuation

Active population

The main active population characteristics, i.e. initial size, sex and age distribution, average salaries, contribution density and past service credit, have already been specified in Chapter 2 in Tables 2.7, 2.8, and 2.9.

Economic assumptions

The ninth valuation applied the same economic assumptions as those of the eighth valuation with the exception of population and employment.[4] The main economic assumptions are listed in Table 4.11.

In line with the provisions of the employees' social security act, pension adjustment is assumed to be in line with the consumer price index (CPI). It is assumed in the projections that the salary increase rate will also apply to the adjustments of the scheme parameters fixed in monetary MYR terms, i.e. the salary ceiling for coverage, the minimum invalidity pension and the funeral grant, starting from the initial values of MYR3,000, 2,500 and 1,500 respectively.

4 No new economic assumptions were povided Malaysian Government. As there were no bases for changing these assumptions amid the turbulent economic period, the same assumtions were maintained. It should be noted that the wage increase is assumed in line with the productivity. increase, which is considered as a reasonable assumption in the long-term prohection.

Table 4.11 Economic assumptions

Year	Population ('000)	Employment ('000)	Real wage increase rate (%)	Growth rate (%)	Nominal (%) wage Increase rate	CPI (Base 2000= 100)	Inflation rate (%)	Real interest rate (%)	Nominal (%) interest rate
2010	25 794	10 395	2.95		4.80	124.4	1.80	2.50	4.59
2011	26 291	10 708	2.96	6.06	5.02	126.9	2.00	2.50	4.55
2012	26 797	10 920	2.96	5.00	5.02	129.4	2.00	2.50	4.55
2013	27 333	11 138	2.96	5.02	5.01	132.0	2.00	2.50	4.55
2014	27 854	11 343	2.95	4.84	5.01	134.7	2.00	2.50	4.55
2015	28 382	11 545	2.96	4.79	5.02	137.3	2.00	2.50	4.55
2016	28 916	11 742	2.97	4.73	5.03	140.1	2.00	2.50	4.55
2017	29 456	11 934	2.98	4.66	5.04	142.9	2.00	2.50	4.55
2018	30 000	12 121	2.99	4.60	5.05	145.8	2.00	2.50	4.55
2019	30 547	12 299	2.98	4.49	5.04	148.7	2.00	2.50	4.55
2020	31 098	12 467	2.96	4.37	5.02	151.6	2.00	2.50	4.55
2021	31 649	12 627	2.93	4.25	4.99	154.7	2.00	2.50	4.55
2022	32 201	12 777	2.89	4.11	4.95	157.8	2.00	2.50	4.55
2023	32 751	12 917	2.85	3.98	4.91	160.9	2.00	2.50	4.55
2024	33 297	13 049	2.81	3.86	4.86	164.1	2.00	2.50	4.55
2025	33 839	13 173	2.76	3.74	4.81	167.4	2.00	2.50	4.55
2026	34 374	13 312	2.71	3.79	4.76	170.8	2.00	2.50	4.55
2027	34 902	13 444	2.66	3.68	4.71	174.2	2.00	2.50	4.55
2028	35 423	13 571	2.61	3.58	4.66	177.7	2.00	2.50	4.55
2029	35 936	13 694	2.56	3.49	4.61	181.2	2.00	2.50	4.55
2030	36 442	13 812	2.51	3.39	4.56	184.9	2.00	2.50	4.55
2031	36 945	14 000	2.46	3.85	4.51	188.5	2.00	2.50	4.55
2032	37 446	14 190	2.41	3.80	4.46	192.3	2.00	2.50	4.55
2033	37 947	14 383	2.37	3.76	4.42	196.2	2.00	2.50	4.55
2034	38 452	14 578	2.32	3.71	4.37	200.1	2.00	2.50	4.55
2035	38 962	14 775	2.28	3.66	4.32	204.1	2.00	2.50	4.55
2036	39 481	15 014	2.23	3.88	4.28	208.2	2.00	2.50	4.55
2037	40 003	15 254	2.19	3.82	4.23	212.3	2.00	2.50	4.55
2038	40 531	15 495	2.14	3.75	4.19	216.6	2.00	2.50	4.55
2039	41 064	15 734	2.11	3.68	4.15	220.9	2.00	2.50	4.55
2040	41 605	15 971	2.07	3.61	4.11	225.3	2.00	2.50	4.55
2041	42 153	16 202	2.03	3.51	4.07	229.8	2.00	2.50	4.55
2042	42 708	16 432	2.00	3.45	4.04	234.4	2.00	2.50	4.55
2043	43 269	16 660	1.96	3.37	4.00	239.1	2.00	2.50	4.55
2044	43 835	16 885	1.93	3.31	3.97	243.9	2.00	2.50	4.55
2045	44 405	17 105	1.89	3.22	3.93	248.8	2.00	2.50	4.55
2046	44 979	17 316	1.86	3.12	3.89	253.8	2.00	2.50	4.55
2047	45 553	17 523	1.82	3.04	3.86	258.8	2.00	2.50	4.55
2048	46 127	17 724	1.78	2.95	3.82	264.0	2.00	2.50	4.55
2049	46 698	17 922	1.74	2.88	3.78	269.3	2.00	2.50	4.55
2050	47 265	18 117	1.71	2.82	3.74	274.7	2.00	2.50	4.55

Source: Eight actuarial valuation

7. Demographic and financial projections of Invalidity and Survivors' Benefits Branch

The projections presented in this chapter relate to the Invalidity and Survivors' Benefits Branch.

Status-quo projections

The Invalidity and Survivors' Benefit Branch is financed on a partially funded basis under the scaled premium system. This implies that the contribution rate will need to be gradually raised in the future. The main purpose of the valuation is to give an indication of the forthcoming dates when such contribution increases are likely to be required and of the required future contribution rates to make the scheme financially sustainable.

The demographic projection is presented in Table 4.12 for a period of 40 years (starting from base year 2010 to year 2050). The ratio of pension beneficiaries over active contributors is expected to grow from the current 3.5 per cent to 6.6 per cent in 2050.

The financial projection is presented in Table 4.13. The PAYG cost rate is expected to grow, from the present 1.01 per cent to over 1.89 per cent in 2050. The projection indicates that the current contribution rate needs to be raised at latest in 2012.

Table 4.12 Demographic projection of invalidity and survivors' benefits Branch

Year	Active Persons	Numbers				Ratio of beneficiaries over active contributors (%)			
		Invalids	Widows (ers)	Orphans, second dep.	Total	Invalids	Widows (ers)	Orphans, second dep.	Total
2010	5 230 461	33 717	60 420	90 425	184 562	0.64	1.16	1.73	3.53
2011	5 327 872	37 052	65 845	95 862	198 758	0.70	1.24	1.80	3.73
2012	5 425 270	40 369	71 213	107 095	218 677	0.74	1.31	1.97	4.03
2013	5 527 211	43 698	76 527	117 996	238 221	0.79	1.38	2.13	4.31
2014	5 624 277	47 040	81 783	128 411	257 234	0.84	1.45	2.28	4.57
2015	5 721 172	50 392	86 975	138 153	275 520	0.88	1.52	2.41	4.82
2016	5 817 502	53 754	92 094	147 072	292 919	0.92	1.58	2.53	5.04
2017	5 912 347	57 122	97 134	155 069	309 325	0.97	1.64	2.62	5.23
2018	6 004 145	60 497	102 092	162 111	324 700	1.01	1.70	2.70	5.41
2019	6 091 540	63 876	106 965	168 216	339 057	1.05	1.76	2.76	5.57
2020	6 173 132	67 259	111 756	173 440	352 455	1.09	1.81	2.81	5.71
2021	6 247 852	70 644	116 479	177 883	365 006	1.13	1.86	2.85	5.84
2022	6 315 021	74 030	121 141	181 621	376 792	1.17	1.92	2.88	5.97
2023	6 375 136	77 416	125 739	184 629	387 784	1.21	1.97	2.90	6.08
2024	6 429 123	80 805	130 271	186 850	397 926	1.26	2.03	2.91	6.19
2025	6 477 973	84 202	134 737	188 207	407 146	1.30	2.08	2.91	6.29
2026	6 522 534	87 617	139 140	188 617	415 374	1.34	2.13	2.89	6.37
2027	6 563 925	91 058	143 486	188 040	422 584	1.39	2.19	2.86	6.44
2028	6 603 286	94 534	147 780	186 534	428 848	1.43	2.24	2.82	6.49
2029	6 650 327	98 053	152 028	184 301	434 382	1.47	2.29	2.77	6.53
2030	6 707 441	101 620	156 234	181 594	439 447	1.52	2.33	2.71	6.55
2031	6 770 080	105 236	160 399	178 654	444 289	1.55	2.37	2.64	6.56
2032	6 839 663	108 903	164 525	179 544	452 971	1.59	2.41	2.63	6.62
2033	6 923 436	112 620	168 610	180 373	461 603	1.63	2.44	2.61	6.67
2034	7 014 842	116 382	172 654	181 105	470 142	1.66	2.46	2.58	6.70
2035	7 118 603	120 182	176 658	181 712	478 552	1.69	2.48	2.55	6.72
2036	7 219 164	124 011	180 621	182 162	486 794	1.72	2.50	2.52	6.74
2037	7 321 440	127 857	184 539	182 414	494 810	1.75	2.52	2.49	6.76
2038	7 425 460	131 707	188 405	182 421	502 533	1.77	2.54	2.46	6.77
2039	7 536 071	135 546	192 210	182 161	509 917	1.80	2.55	2.42	6.77
2040	7 652 568	139 366	195 958	181 674	516 998	1.82	2.56	2.37	6.76
2041	7 759 695	143 087	199 670	181 057	523 814	1.84	2.57	2.33	6.75
2042	7 871 782	146 669	203 356	180 393	530 419	1.86	2.58	2.29	6.74
2043	7 986 886	150 088	207 014	179 725	536 827	1.88	2.59	2.25	6.72
2044	8 103 601	153 417	210 642	179 090	543 149	1.89	2.60	2.21	6.70
2045	8 222 404	156 678	214 238	178 514	549 430	1.91	2.61	2.17	6.68
2046	8 331 900	160 100	217 797	178 016	555 914	1.92	2.61	2.14	6.67
2047	8 441 370	163 425	221 317	177 613	562 354	1.94	2.62	2.10	6.66
2048	8 548 039	166 649	224 790	177 330	568 768	1.95	2.63	2.07	6.65
2049	8 653 608	169 770	228 212	177 209	575 192	1.96	2.64	2.05	6.65
2050	8 755 638	172 791	231 577	177 284	581 652	1.97	2.64	2.02	6.64

Table 4.13 Financial projection of invalidity and survivors' benefits branch

Year	Insured Sal Bill	Amounts (MYR million)				PAYG cost rate (%)			
		Invalids	Widows (ers)	Orphans, second dep.	Total	Invalids	Widows (ers)	Orphans, second dep.	Total
2010	90 095	339	315	258	912	0.38	0.35	0.29	1.01
2011	96 415	386	360	286	1 032	0.40	0.37	0.30	1.07
2012	103 174	434	407	336	1 177	0.42	0.39	0.33	1.14
2013	110 482	485	456	388	1 330	0.44	0.41	0.35	1.20
2014	118 179	540	508	442	1 490	0.46	0.43	0.37	1.26
2015	126 382	598	563	496	1 657	0.47	0.45	0.39	1.31
2016	135 113	660	620	551	1 832	0.49	0.46	0.41	1.36
2017	144 401	727	680	606	2 013	0.50	0.47	0.42	1.39
2018	154 248	797	744	659	2 201	0.52	0.48	0.43	1.43
2019	164 634	873	810	713	2 395	0.53	0.49	0.43	1.45
2020	175 529	953	880	765	2 598	0.54	0.50	0.44	1.48
2021	186 904	1 038	953	817	2 809	0.56	0.51	0.44	1.50
2022	198 733	1 129	1 031	870	3 029	0.57	0.52	0.44	1.52
2023	211 003	1 225	1 113	922	3 260	0.58	0.53	0.44	1.54
2024	223 715	1 328	1 199	973	3 500	0.59	0.54	0.44	1.56
2025	236 879	1 437	1 290	1 024	3 751	0.61	0.54	0.43	1.58
2026	250 494	1 554	1 386	1 073	4 013	0.62	0.55	0.43	1.60
2027	264 575	1 679	1 487	1 121	4 287	0.63	0.56	0.42	1.62
2028	279 126	1 812	1 594	1 168	4 573	0.65	0.57	0.42	1.64
2029	294 287	1 955	1 706	1 215	4 876	0.66	0.58	0.41	1.66
2030	310 074	2 108	1 826	1 263	5 196	0.68	0.59	0.41	1.68
2031	326 890	2 272	1 951	1 313	5 536	0.69	0.60	0.40	1.69
2032	344 500	2 447	2 084	1 383	5 914	0.71	0.61	0.40	1.72
2033	363 189	2 634	2 225	1 456	6 315	0.73	0.61	0.40	1.74
2034	382 717	2 834	2 372	1 532	6 739	0.74	0.62	0.40	1.76
2035	403 273	3 047	2 528	1 611	7 186	0.76	0.63	0.40	1.78
2036	425 621	3 274	2 691	1 691	7 656	0.77	0.63	0.40	1.80
2037	448 877	3 514	2 863	1 773	8 149	0.78	0.64	0.39	1.82
2038	473 119	3 767	3 042	1 855	8 664	0.80	0.64	0.39	1.83
2039	498 799	4 034	3 230	1 937	9 201	0.81	0.65	0.39	1.84
2040	525 992	4 315	3 427	2 018	9 760	0.82	0.65	0.38	1.86
2041	554 596	4 608	3 633	2 101	10 342	0.83	0.66	0.38	1.86
2042	585 414	4 914	3 849	2 185	10 948	0.84	0.66	0.37	1.87
2043	617 963	5 233	4 075	2 271	11 579	0.85	0.66	0.37	1.87
2044	652 249	5 567	4 312	2 360	12 239	0.85	0.66	0.36	1.88
2045	688 402	5 915	4 559	2 452	12 927	0.86	0.66	0.36	1.88
2046	725 576	6 281	4 819	2 548	13 648	0.87	0.66	0.35	1.88
2047	764 510	6 662	5 090	2 647	14 399	0.87	0.67	0.35	1.88
2048	804 939	7 059	5 372	2 751	15 182	0.88	0.67	0.34	1.89
2049	847 052	7 472	5 668	2 859	15 999	0.88	0.67	0.34	1.89
2050	890 606	7 901	5 976	2 974	16 851	0.89	0.67	0.33	1.89

Contribution rates under the scaled premium system

The scaled premium system calculations are presented in Table 4.14. In addition to the benefit expenditure projections in Table 4.13, other liability expenses have been estimated at 13 per cent of the benefit expenditure, and administration expenditure has been estimated at 0.08 per cent of the insured salary bill.The table shows that the invalidity pension reserve will start decreasing in 2015 so that if the principle of the scaled premium system is to be maintained, the contribution rate should be raised at the latest by 2012. In case a variant of the scaled premium system, in which the amount of reserves do not decrease, is adopted with an increase rate of 0.5 per cent, the contribution rate should be increased to 1.5 per cent in 2012, 2.0 per cent in 2020 and 2.5 per cent in 2043.

Table 4.14 Contribution rates under the scaled premium system (0.5 percent increase for each period) (MYR million)

Year	Sal Bill (MYR mill)	Ben Exp. (MYR mill)	Other Liabilities Exp. (MYR mill)	Admin Exp. (MYR mill)	Total Exp. (MYR mill)	Interest rate (%)	Year and reserve			
							CR=1.0%	CR=1.5%	CR=2.0%	CR=2.5%
2010	90 095	912	118	76	1 106	4.48				
2011	96 415	1 032	134	81	1 247	4.55	7 766	7 766		
2012	103 174	1 177	153	87	1 417	4.55	7 726	8 254		
2013	110 482	1 330	173	93	1 595	4.55		8 692		
2014	118 179	1 490	193	99	1 783	4.55		9 078		
2015	126 382	1 657	215	106	1 979	4.55		9 406		
2016	135 113	1 832	238	113	2 183	4.55		9 674		
2017	144 401	2 013	261	121	2 395	4.55		9 880		
2018	154 248	2 201	286	130	2 616	4.55		10 020		
2019	164 634	2 395	311	138	2 845	4.55		10 093	10 093	
2020	175 529	2 598	337	147	3 082	4.55		10 092	10 990	
2021	186 904	2 809	365	157	3 330	4.55			11 907	
2022	198 733	3 029	393	167	3 589	4.55			12 842	
2023	211 003	3 260	423	177	3 860	4.55			13 795	
2024	223 715	3 500	454	188	4 142	4.55			14 762	
2025	236 879	3 751	487	199	4 437	4.55			15 741	
2026	250 494	4 013	521	210	4 744	4.55			16 728	
2027	264 575	4 287	557	222	5 065	4.55			17 721	
2028	279 126	4 573	594	234	5 402	4.55			18 712	
2029	294 287	4 876	633	247	5 756	4.55			19 696	
2030	310 074	5 196	675	260	6 131	4.55			20 664	
2031	326 890	5 536	719	275	6 529	4.55			21 613	
2032	344 500	5 914	768	289	6 972	4.55			22 513	
2033	363 189	6 315	820	305	7 440	4.55			23 356	
2034	382 717	6 739	875	321	7 936	4.55			24 132	
2035	403 273	7 186	933	339	8 458	4.55			24 828	
2036	425 621	7 656	994	358	9 008	4.55			25 451	
2037	448 877	8 149	1 058	377	9 584	4.55			25 989	
2038	473 119	8 664	1 125	397	10 187	4.55			26 431	

Year	Sal Bill (MYR mill)	Ben Exp. (MYR mill)	Other Liabilities Exp. (MYR mill)	Admin Exp. (MYR mill)	Total Exp. (MYR mill)	Interest rate (%)	Year and reserve			
							CR=1.0% (MYR mill)	CR=1.5% (MYR mill)	CR=2.0% (MYR mill)	CR=2.5% (MYR mill)
2039	498 799	9 201	1 195	419	10 815	4.55			26 776	
2040	525 992	9 760	1 267	442	11 469	4.55			27 023	
2041	554 596	10 342	1 343	466	12 150	4.55			27 171	
2042	585 414	10 948	1 422	492	12 861	4.55			27 228	27 228
2043	617 963	11 579	1 504	519	13 602	4.55			27 196	30 356
2044	652 249	12 239	1 589	548	14 376	4.55				33 711
2045	688 402	12 927	1 679	578	15 184	4.55				37 317
2046	725 576	13 648	1 772	609	16 029	4.55				41 172
2047	764 510	14 399	1 870	642	16 911	4.55				45 297
2048	804 939	15 182	1 971	676	17 830	4.55				49 703
2049	847 052	15 999	2 077	712	18 788	4.55				54 407
2050	890 606	16 851	2 188	748	19 787	4.55				59 416

Financial projection in case of increasing the minimum pension to MYR 475

The financial projection with the minimum pension increased from the current MYR250 to MYR475 is presented in Table 4.15. No significant change is seen at the beginning of the projection, but the difference of the PAYG cost rate will be seen gradually in the future. The PAYG cost rate increase is expected to be 0.02 percentage points in 2030, 0.04 percentage points in 2040, and 0.05 percentage points in 2050.

Table 4.15 Financial projection of Invalidity and Survivors' Benefits Branch: minimum pension MYR475 for new awards in 2013

Year	Insured Sal Bill	Amounts (MYR million)				PAYG cost rate (%)			
		Invalids	widows (ers)	Orphans, second dep.	Total	Invalids (%)	widows (ers) (%)	Orphans second dep. (%)	Total (%)
2010	90 095	339	315	258	912	0.38	0.35	0.29	1.01
2011	96 415	386	360	286	1 032	0.40	0.37	0.30	1.07
2012	103 174	434	407	336	1 177	0.42	0.39	0.33	1.14
2013	110 482	486	456	388	1 330	0.44	0.41	0.35	1.20
2014	118 179	542	508	442	1 492	0.46	0.43	0.37	1.26
2015	126 382	602	563	496	1 661	0.48	0.45	0.39	1.31
2016	135 113	666	620	551	1 837	0.49	0.46	0.41	1.36
2017	144 401	734	680	606	2 020	0.51	0.47	0.42	1.40
2018	154 248	807	744	660	2 211	0.52	0.48	0.43	1.43
2019	164 634	885	810	713	2 408	0.54	0.49	0.43	1.46
2020	175 529	969	880	765	2 614	0.55	0.50	0.44	1.49
2021	186 904	1 058	954	818	2 829	0.57	0.51	0.44	1.51
2022	198 733	1 152	1 031	870	3 054	0.58	0.52	0.44	1.54
2023	211 003	1 254	1 113	922	3 289	0.59	0.53	0.44	1.56
2024	223 715	1 361	1 200	974	3 535	0.61	0.54	0.44	1.58
2025	236 879	1 477	1 291	1 025	3 792	0.62	0.54	0.43	1.60

Year	Insured Sal Bill	Amounts (MYR million)				PAYG cost rate			
		Invalids	Widows (ers)	Orphans, second dep.	Total	Invalids (%)	Widows (ers) (%)	Orphans, second dep. (%)	Total (%)
2026	250 494	1 599	1 387	1 074	4 060	0.64	0.55	0.43	1.62
2027	264 575	1 731	1 488	1 122	4 341	0.65	0.56	0.42	1.64
2028	279 126	1 871	1 595	1 169	4 635	0.67	0.57	0.42	1.66
2029	294 287	2 022	1 708	1 216	4 946	0.69	0.58	0.41	1.68
2030	310 074	2 184	1 828	1 264	5 275	0.70	0.59	0.41	1.70
2031	326 890	2 357	1 954	1 314	5 625	0.72	0.60	0.40	1.72
2032	344 500	2 542	2 087	1 385	6 014	0.74	0.61	0.40	1.75
2033	363 189	2 740	2 228	1 458	6 426	0.75	0.61	0.40	1.77
2034	382 717	2 951	2 376	1 534	6 862	0.77	0.62	0.40	1.79
2035	403 273	3 176	2 532	1 613	7 321	0.79	0.63	0.40	1.82
2036	425 621	3 416	2 696	1 693	7 805	0.80	0.63	0.40	1.83
2037	448 877	3 669	2 868	1 775	8 313	0.82	0.64	0.40	1.85
2038	473 119	3 937	3 049	1 857	8 843	0.83	0.64	0.39	1.87
2039	498 799	4 220	3 238	1 939	9 397	0.85	0.65	0.39	1.88
2040	525 992	4 517	3 435	2 021	9 973	0.86	0.65	0.38	1.90
2041	554 596	4 827	3 642	2 104	10 573	0.87	0.66	0.38	1.91
2042	585 414	5 152	3 859	2 188	11 198	0.88	0.66	0.37	1.91
2043	617 963	5 490	4 086	2 275	11 851	0.89	0.66	0.37	1.92
2044	652 249	5 843	4 324	2 364	12 531	0.90	0.66	0.36	1.92
2045	688 402	6 213	4 573	2 456	13 242	0.90	0.66	0.36	1.92
2046	725 576	6 601	4 834	2 552	13 987	0.91	0.67	0.35	1.93
2047	764 510	7 006	5 106	2 651	14 763	0.92	0.67	0.35	1.93
2048	804 939	7 426	5 391	2 755	15 572	0.92	0.67	0.34	1.93
2049	847 052	7 864	5 688	2 864	16 416	0.93	0.67	0.34	1.94
2050	890 606	8 320	5 997	2 979	17 296	0.93	0.67	0.33	1.94

Estimate with regard to increasing the retirement age to 60

This part shows estimates for the Invalidity and Survivors' Benefit Branch in the event of the retirement age being raised from 55 to 60 from 2013.

The number of active persons is projected to increase by 3.8 per cent in 2050 compared with the current scheme under which the retirement age is 55. The number of beneficiaries is also projected to increase steadily and thus 1.2 per cent more people will be subject to the invalidity and survivors' benefits in 2050.

In the long-term, insured salary bill is projected to increase by 3.7 per cent in 2050 as compared with the current scheme (retirement age of 55). Benefit expenditure is also projected to increase steadily in the long-term and 2.1 per cent more benefit expenditure is expected to be required in 2050. Income and expenditure of the branch are not expected to be significantly influenced by an increase in the retirement age to 60. Even though the retirement age increases from 55 to 60, additional benefits will beincurred due to the nature of the invalidity and survivors' benefits, only in the event of invalidity of active persons between age 55 and 60.

Table 4.16 Demographic projections of Invalidity and Survivors' Benefits Branch: retirement age increased to 60 in 2013

Year	Active Persons	Numbers				Ratio of beneficiaries over active contributors (%)			
		Invalids	Widows (ers)	Orphans, second dep.	Total	Invalids (%)	Widows (ers) (%)	Orphans, second dep. (%)	Total (%)
2010	5 230 461	33 717	60 420	90 425	184 562	0.64	1.16	1.73	3.53
2011	5 327 872	37 052	65 845	95 862	198 758	0.70	1.24	1.80	3.73
2012	5 425 270	40 369	71 213	107 095	218 677	0.74	1.31	1.97	4.03
2013	5 699 912	44 148	76 530	118 001	238 679	0.77	1.34	2.07	4.19
2014	5 801 510	47 642	81 789	128 421	257 852	0.82	1.41	2.21	4.44
2015	5 902 756	51 147	86 986	138 167	276 301	0.87	1.47	2.34	4.68
2016	6 003 171	54 661	92 111	147 090	293 863	0.91	1.53	2.45	4.90
2017	6 101 777	58 182	97 160	155 090	310 432	0.95	1.59	2.54	5.09
2018	6 197 117	61 709	102 128	162 133	325 970	1.00	1.65	2.62	5.26
2019	6 287 987	65 240	107 012	168 240	340 492	1.04	1.70	2.68	5.41
2020	6 373 060	68 775	111 816	173 464	354 056	1.08	1.75	2.72	5.56
2021	6 451 298	72 313	116 554	177 908	366 774	1.12	1.81	2.76	5.69
2022	6 522 143	75 851	121 232	181 646	378 729	1.16	1.86	2.79	5.81
2023	6 585 726	79 389	125 847	184 655	389 891	1.21	1.91	2.80	5.92
2024	6 642 409	82 927	130 397	186 877	400 202	1.25	1.96	2.81	6.02
2025	6 692 913	86 471	134 883	188 235	409 589	1.29	2.02	2.81	6.12
2026	6 738 251	90 028	139 308	188 645	417 981	1.34	2.07	2.80	6.20
2027	6 779 567	93 607	143 675	188 069	425 352	1.38	2.12	2.77	6.27
2028	6 818 605	97 219	147 993	186 563	431 775	1.43	2.17	2.74	6.33
2029	6 865 981	100 873	152 265	184 331	437 468	1.47	2.22	2.68	6.37
2030	6 924 663	104 575	156 495	181 624	442 694	1.51	2.26	2.62	6.39
2031	6 989 979	108 328	160 687	178 684	447 698	1.55	2.30	2.56	6.40
2032	7 063 261	112 133	164 839	179 574	456 546	1.59	2.33	2.54	6.46
2033	7 151 931	115 990	168 951	180 404	465 345	1.62	2.36	2.52	6.51
2034	7 249 618	119 895	173 024	181 136	474 055	1.65	2.39	2.50	6.54
2035	7 361 075	123 843	177 056	181 744	482 643	1.68	2.41	2.47	6.56
2036	7 470 687	127 827	181 049	182 194	491 070	1.71	2.42	2.44	6.57
2037	7 583 363	131 837	184 997	182 447	499 281	1.74	2.44	2.41	6.58
2038	7 698 333	135 855	188 893	182 456	507 205	1.76	2.45	2.37	6.59
2039	7 819 254	139 868	192 730	182 197	514 795	1.79	2.46	2.33	6.58
2040	7 944 684	143 864	196 511	181 711	522 086	1.81	2.47	2.29	6.57
2041	8 059 461	147 762	200 256	181 096	529 113	1.83	2.48	2.25	6.57
2042	8 177 926	151 522	203 976	180 432	535 930	1.85	2.49	2.21	6.55
2043	8 298 314	155 119	207 668	179 765	542 552	1.87	2.50	2.17	6.54
2044	8 419 595	158 626	211 331	179 132	549 088	1.88	2.51	2.13	6.52
2045	8 542 504	162 064	214 961	178 557	555 582	1.90	2.52	2.09	6.50
2046	8 655 478	165 661	218 555	178 060	562 276	1.91	2.53	2.06	6.50
2047	8 767 587	169 159	222 110	177 657	568 925	1.93	2.53	2.03	6.49
2048	8 876 582	172 553	225 618	177 374	575 545	1.94	2.54	2.00	6.48
2049	8 984 956	175 845	229 075	177 255	582 175	1.96	2.55	1.97	6.48
2050	9 090 650	179 038	232 474	177 330	588 842	1.97	2.56	1.95	6.48

Table 4.17 Financial projections of Invalidity and Survivors' Benefits Branch: retirement age increased to 60 in 2013

Year		Amounts (MYR million)				PAYG cost rate (%)			
	Insured Sal Bill	Invalids	Widows (ers)	Orphans, second dep.	Total	Invalids (%)	Widows (ers) (%)	Orphans, second dep. (%)	Total (%)
2010	90 095	339	315	258	912	0.38	0.35	0.29	1.01
2011	96 415	387	360	286	1 033	0.40	0.37	0.30	1.07
2012	103 174	437	407	336	1 179	0.42	0.39	0.33	1.14
2013	113 831	490	456	388	1 334	0.43	0.40	0.34	1.17
2014	121 787	547	508	441	1 496	0.45	0.42	0.36	1.23
2015	130 263	608	562	496	1 666	0.47	0.43	0.38	1.28
2016	139 280	673	620	551	1 843	0.48	0.44	0.40	1.32
2017	148 865	742	680	605	2 027	0.50	0.46	0.41	1.36
2018	159 023	815	743	659	2 218	0.51	0.47	0.41	1.39
2019	169 739	894	810	712	2 416	0.53	0.48	0.42	1.42
2020	180 983	977	880	765	2 622	0.54	0.49	0.42	1.45
2021	192 730	1 066	954	817	2 837	0.55	0.49	0.42	1.47
2022	204 957	1 161	1 031	869	3 061	0.57	0.50	0.42	1.49
2023	217 642	1 261	1 113	922	3 296	0.58	0.51	0.42	1.51
2024	230 766	1 368	1 200	973	3 541	0.59	0.52	0.42	1.53
2025	244 326	1 482	1 291	1 024	3 797	0.61	0.53	0.42	1.55
2026	258 324	1 603	1 387	1 073	4 064	0.62	0.54	0.42	1.57
2027	272 770	1 733	1 488	1 121	4 343	0.64	0.55	0.41	1.59
2028	287 689	1 872	1 595	1 168	4 635	0.65	0.55	0.41	1.61
2029	303 258	2 020	1 709	1 215	4 943	0.67	0.56	0.40	1.63
2030	319 523	2 179	1 828	1 263	5 270	0.68	0.57	0.40	1.65
2031	336 888	2 349	1 955	1 313	5 617	0.70	0.58	0.39	1.67
2032	355 120	2 531	2 088	1 383	6 002	0.71	0.59	0.39	1.69
2033	374 523	2 725	2 229	1 457	6 411	0.73	0.60	0.39	1.71
2034	394 873	2 933	2 377	1 533	6 843	0.74	0.60	0.39	1.73
2035	416 374	3 155	2 533	1 611	7 299	0.76	0.61	0.39	1.75
2036	439 795	3 390	2 697	1 692	7 779	0.77	0.61	0.38	1.77
2037	464 266	3 640	2 869	1 773	8 283	0.78	0.62	0.38	1.78
2038	489 829	3 904	3 050	1 855	8 809	0.80	0.62	0.38	1.80
2039	516 865	4 183	3 239	1 937	9 359	0.81	0.63	0.37	1.81
2040	545 398	4 476	3 436	2 019	9 931	0.82	0.63	0.37	1.82
2041	575 326	4 782	3 643	2 101	10 526	0.83	0.63	0.37	1.83
2042	607 443	5 102	3 860	2 186	11 148	0.84	0.64	0.36	1.84
2043	641 272	5 436	4 087	2 272	11 795	0.85	0.64	0.35	1.84
2044	676 842	5 785	4 325	2 361	12 471	0.85	0.64	0.35	1.84
2045	714 298	6 149	4 575	2 453	13 177	0.86	0.64	0.34	1.84
2046	752 779	6 532	4 835	2 548	13 916	0.87	0.64	0.34	1.85
2047	792 999	6 931	5 107	2 648	14 686	0.87	0.64	0.33	1.85
2048	834 733	7 346	5 392	2 751	15 490	0.88	0.65	0.33	1.86
2049	878 242	7 778	5 689	2 860	16 327	0.89	0.65	0.33	1.86
2050	923 325	8 228	5 998	2 975	17 202	0.89	0.65	0.32	1.86

Estimate with regard to increasing the wage ceiling to MYR5,000

Demographic and financial projections were carried out in case the wage ceiling is increased from the current MYR3,000 to MYR5,000 in 2013. This would result in the increase of the number of the contributor of 12.3 per cent, the increase in the insured salary of 13.1 per cent and the reduction of the PAYG cost rate for benefits from the status-quo projection of 1.20 per cent to 1.06 per cent in 2013 when the wage ceiling increase took place in the projection.

As only new pensions from the year 2013 will be calculated on the basis of this new ceiling and it takes some time before these higher pensions become a majority, the short-term PAYG cost rate for benefits would be lowered for a while. However, the PAYG cost rate would become similar in the long run since both insured wages and pension amount would be increased in the same order.

It is recommended that the wage ceiling should be increased to MYR5,000 from the point of view of providing better protection to higher-income earners in the SOCSO scheme and providing more adequate pensions.

Table 4.18 Demographic projections of Invalidity and Survivors' Benefits Branch: wage ceiling increased to MYR5,000 in 2013

Year	Active Persons	Numbers				Ratio of beneficiaries over active contributors			
		Invalids	Widows (ers)	Orphans, second dep.	Total	Invalids (%)	Widows (ers) (%)	Orphans, second dep. (%)	Total (%)
2010	5 230 461	33 717	60 420	90 425	184 562	0.64	1.16	1.73	3.53
2011	5 327 872	37 052	65 845	95 862	198 758	0.70	1.24	1.80	3.73
2012	5 425 270	40 369	71 213	107 095	218 677	0.74	1.31	1.97	4.03
2013	6 207 910	43 698	76 527	117 996	238 221	0.70	1.23	1.90	3.84
2014	6 316 930	47 289	82 132	129 362	258 783	0.75	1.30	2.05	4.10
2015	6 425 758	51 138	88 020	140 928	280 086	0.80	1.37	2.19	4.36
2016	6 533 951	54 998	93 832	151 645	300 476	0.84	1.44	2.32	4.60
2017	6 640 477	58 868	99 563	161 394	319 825	0.89	1.50	2.43	4.82
2018	6 743 581	62 745	105 209	170 125	338 080	0.93	1.56	2.52	5.01
2019	6 841 739	66 629	110 768	177 828	355 224	0.97	1.62	2.60	5.19
2020	6 933 379	70 517	116 243	184 557	371 316	1.02	1.68	2.66	5.36
2021	7 017 301	74 407	121 652	190 401	386 460	1.06	1.73	2.71	5.51
2022	7 092 743	78 298	127 002	195 450	400 750	1.10	1.79	2.76	5.65
2023	7 160 261	82 190	132 290	199 670	414 150	1.15	1.85	2.79	5.78
2024	7 220 896	86 084	137 513	203 014	426 611	1.19	1.90	2.81	5.91
2025	7 275 763	89 987	142 672	205 401	438 060	1.24	1.96	2.82	6.02
2026	7 325 811	93 909	147 770	206 762	448 441	1.28	2.02	2.82	6.12
2027	7 372 300	97 860	152 813	207 046	457 719	1.33	2.07	2.81	6.21
2028	7 416 509	101 849	157 807	206 317	465 973	1.37	2.13	2.78	6.28
2029	7 469 343	105 886	162 758	204 754	473 397	1.42	2.18	2.74	6.34
2030	7 533 490	109 975	167 669	202 602	480 246	1.46	2.23	2.69	6.37
2031	7 603 844	114 119	172 542	200 077	486 738	1.50	2.27	2.63	6.40

Year	Active Persons	Numbers				Ratio of beneficiaries over active contributors (%)			
		Invalids	Widows (ers)	Orphans, second dep.	Total	Invalids (%)	Widows (ers) (%)	Orphans, second dep. (%)	Total (%)
2032	7 681 996	118 319	177 378	201 257	496 954	1.54	2.31	2.62	6.47
2033	7 776 086	122 574	182 174	202 272	507 020	1.58	2.34	2.60	6.52
2034	7 878 749	126 878	186 930	203 127	516 935	1.61	2.37	2.58	6.56
2035	7 995 288	131 224	191 645	203 819	526 689	1.64	2.40	2.55	6.59
2036	8 108 234	135 601	196 318	204 335	536 254	1.67	2.42	2.52	6.61
2037	8 223 106	139 997	200 944	204 626	545 567	1.70	2.44	2.49	6.63
2038	8 339 937	144 394	205 512	204 643	554 549	1.73	2.46	2.45	6.65
2039	8 464 170	148 778	210 013	204 357	563 149	1.76	2.48	2.41	6.65
2040	8 595 014	153 140	214 453	203 814	571 407	1.78	2.50	2.37	6.65
2041	8 715 334	157 398	218 852	203 126	579 376	1.81	2.51	2.33	6.65
2042	8 841 225	161 513	223 222	202 383	587 118	1.83	2.52	2.29	6.64
2043	8 970 504	165 458	227 560	201 636	594 654	1.84	2.54	2.25	6.63
2044	9 101 593	169 309	231 863	200 926	602 098	1.86	2.55	2.21	6.62
2045	9 235 027	173 087	236 128	200 281	609 496	1.87	2.56	2.17	6.60
2046	9 358 009	177 021	240 351	199 723	617 095	1.89	2.57	2.13	6.59
2047	9 480 960	180 852	244 527	199 271	624 650	1.91	2.58	2.10	6.59
2048	9 600 766	184 578	248 649	198 954	632 181	1.92	2.59	2.07	6.58
2049	9 719 336	188 197	252 710	198 820	639 727	1.94	2.60	2.05	6.58
2050	9 833 932	191 711	256 704	198 905	647 319	1.95	2.61	2.02	6.58

Table 4.19 Financial projections of Invalidity and Survivors' Benefits Branch: wage ceiling increased to MYR5,000 in 2013

Year	Insured Sal Bill	Amounts (MYR million)				PAYG cost rate (%)			
		Invalids	Widows (ers)	Orphans, second dep.	Total	Invalids (%)	Widows (ers) (%)	Orphans, second dep. (%)	Total (%)
2010	90 095	339	315	258	912	0.38	0.35	0.29	1.01
2011	96 415	386	360	286	1 032	0.40	0.37	0.30	1.07
2012	103 174	434	407	336	1 177	0.42	0.39	0.33	1.14
2013	124 949	485	456	388	1 330	0.39	0.37	0.31	1.06
2014	133 651	543	511	445	1 499	0.41	0.38	0.33	1.12
2015	142 927	607	571	507	1 685	0.42	0.40	0.35	1.18
2016	152 802	676	634	569	1 879	0.44	0.41	0.37	1.23
2017	163 308	750	700	632	2 082	0.46	0.43	0.39	1.28
2018	174 447	829	770	694	2 294	0.48	0.44	0.40	1.31
2019	186 198	913	844	756	2 514	0.49	0.45	0.41	1.35
2020	198 526	1 003	922	818	2 743	0.51	0.46	0.41	1.38
2021	211 398	1 099	1 004	880	2 982	0.52	0.47	0.42	1.41
2022	224 786	1 201	1 090	942	3 233	0.53	0.49	0.42	1.44
2023	238 676	1 309	1 182	1 004	3 495	0.55	0.50	0.42	1.46

Year	Insured Sal Bill	Amounts (MYR million)				PAYG cost rate (%)			
		Invalids	Widows (ers)	Orphans, second dep.	Total	Invalids (%)	Widows (ers) (%)	Orphans, second dep. (%)	Total (%)
2024	253 070	1 425	1 279	1 066	3 770	0.56	0.51	0.42	1.49
2025	267 977	1 549	1 381	1 127	4 057	0.58	0.52	0.42	1.51
2026	283 399	1 680	1 489	1 187	4 357	0.59	0.53	0.42	1.54
2027	299 352	1 822	1 604	1 245	4 671	0.61	0.54	0.42	1.56
2028	315 839	1 973	1 725	1 303	5 000	0.62	0.55	0.41	1.58
2029	333 020	2 135	1 852	1 361	5 348	0.64	0.56	0.41	1.61
2030	350 912	2 308	1 988	1 420	5 716	0.66	0.57	0.40	1.63
2031	369 966	2 494	2 131	1 482	6 107	0.67	0.58	0.40	1.65
2032	389 920	2 693	2 282	1 563	6 539	0.69	0.59	0.40	1.68
2033	411 091	2 906	2 442	1 648	6 996	0.71	0.59	0.40	1.70
2034	433 205	3 134	2 610	1 735	7 479	0.72	0.60	0.40	1.73
2035	456 473	3 376	2 788	1 825	7 989	0.74	0.61	0.40	1.75
2036	481 758	3 634	2 975	1 917	8 525	0.75	0.62	0.40	1.77
2037	508 061	3 907	3 171	2 011	9 088	0.77	0.62	0.40	1.79
2038	535 470	4 195	3 376	2 105	9 676	0.78	0.63	0.39	1.81
2039	564 497	4 499	3 591	2 198	10 288	0.80	0.64	0.39	1.82
2040	595 227	4 818	3 816	2 292	10 926	0.81	0.64	0.39	1.84
2041	627 556	5 152	4 052	2 386	11 590	0.82	0.65	0.38	1.85
2042	662 377	5 501	4 299	2 482	12 283	0.83	0.65	0.37	1.85
2043	699 150	5 865	4 558	2 581	13 004	0.84	0.65	0.37	1.86
2044	737 881	6 246	4 830	2 682	13 757	0.85	0.65	0.36	1.86
2045	778 712	6 643	5 114	2 787	14 544	0.85	0.66	0.36	1.87
2046	820 763	7 061	5 411	2 896	15 367	0.86	0.66	0.35	1.87
2047	864 807	7 496	5 722	3 009	16 226	0.87	0.66	0.35	1.88
2048	910 546	7 949	6 046	3 127	17 121	0.87	0.66	0.34	1.88
2049	958 191	8 420	6 384	3 250	18 055	0.88	0.67	0.34	1.88
2050	1 007 467	8 910	6 737	3 381	19 029	0.88	0.67	0.34	1.89

8. Conclusions and recommendations

(1) The Invalidity and Survivors' Benefits Branch is financed on a partially funded basis under the scaled premium system. This implies that the contribution rate needs to be gradually raised in the future.

(2) The PAYG cost rate increased from 0.9 per cent in 2006 to 1.28 per cent in 2010.

(3) The projections indicate that the current contribution rate needs to be raised in 2012. Contribution rate should be increased to 1.5 per cent in 2012 and 2.0 per cent in 2020.

(4) Based on the assumption that the future contribution rate increase is to be properly increased, pensions in payments under the Invalidity and Survivors' Benefits Branch should be adjusted at the same rates proposed for the employment Injury benefits branch, namely:

Pensions awarded before 2008	3.3%
Pensions awarded in 2008	3.7%
Pensions awarded in 2009	3.0%
Pensions awarded in 2010	1.3%

These adjustments have been already taken into account in the financial projections.

(5) Financial estimates are carried out for policy options of increasing the minimum pension to MYR475, increasing the retirement age to 60 and increasing the wage ceiling to MYR5,000. In 2050, a minimum pension increase would lead to the increase of the PAYG cost rate by 0.05 percentage points, retirement increase would lead to the PAYG cost rate decrease of 0.03 percentage points and wage ceiling increase would be neutral[5] in the PAYG cost rate. It is recommended that all these options should be carried out in order to align the current system in line with the social and economic development of Malaysia.

[5] There are discussions on the profiles of higher income earners who would be effected by the ceiling increase. On one hand, there is an argument that they may face higher risks mainly because they are older on average. On the other hand, they may have much lower risks od invalidity and death due to their social conditions. Those aspects were not taken into account as there are no evidences available to support these guesses.

V. Other issues

To consider whether the assumed minimum daily wage of MYR10 for disablement benefits and dependents' benefits are still applicable

The financial assessment has been done to increase the daily rate to MYR25 and MYR30 and the impact would be substantial. More research and discussion should be carried out to determine the minimum benefit level to be provided by SOCSO by taking into account the poverty line in Malaysia and the reassessment is recommend in the next valuation.

To review the constant attendance allowance of 40 per cent to a fixed amount of MYR500

It is difficult for permanent disability pensioners with low pensions to afford a caretaker by relying on the current constant attendance allowance. The benefit level of the constant attendance allowance needs to be increased for partial disabled beneficiaries with low benefits but in need of a caretaker so that they could afford to hire a caretaker out of the benefits.

To review the present qualifying contribution condition in relation to invalidity especially in respect of the reduced qualifying period by a third where the insured person fails to qualify because of one or two months short

To review the disadvantage of the insured persons who are one or two months short of the qualifying period, it is recommended to e date of invalidity notice

With regards to two questions on the relaxing qualifying conditions for invalidity pensions, currently these conditions are minimum 24 months contributions out of the last 40 months or contributions for at least two-thirds of the period since entry or one-third of the past period. Slight relaxations, such as providing lower benefits to those missing a month or two to satisfy 24 months contribution requirements or to relax the two-thirds conditions to three-fifths, are not considered to have a major impact on financing as possible benefit abuses are contained by strict controls on invalidity conditions themselves and by relatively good contribution compliances of employers and employees. However, it should be noted that relaxing the requirements would not solve all complaints to be made from the members as they will very likely request another relaxation even after some relaxations, and that good compliances for contributions are essential to keep the current contributory scheme sustainable. These issues should be further discussed and carefully planned before carrying out any reforms of relaxing the qualifying conditions.

To examine the financial implications on the extension of rehabilitation benefits and the setting up of rehabilitation centres and operations cost and its impact on the funds

The Employment Injury Benefits Branch of SOCSO pays 99.21 per cent for direct compensation, 0.72 per cent on rehabilitation and 0.07 per cent on prevention. Other countries spend higher percentages of their funds on rehabilitation, e.g. 17 per cent in the United States and 33 per cent in Germany.

According to the cost-benefit analysis of 2007-08, the programme benefits outweighed costs by a ratio of 1.58:1.00.

Considering the international comparison and cost-benefit analysis of setting up of rehabilitation centre, it is recommended that rehabilitation centres should be gradually introduced so that the cost-benefit analysis is properly monitored in order not to damage the financial sustainability of the scheme in the piloting stage.

To examine the financial implications of medical benefits for retirees and its impact on the fund

More data about medical benefits for SOCSO retirees were available for the ninth valuation than for the eighth valuation. However, there is still a limitation in analysing the financial implication of medical benefit for retirees in the medium and long term due to a large gap between the data of 2003-07 in the eighth and those of 2008-10 in the ninth valuation.

The average number of cases for retirees and dependents was 7,522 during the 2003-07 period and it decreased to 3,740 during the 2008-10 period. The weighted average cost of private hospital users, private panel clinic users and private dental clinic users per case was MYR510 during the period of 2003-07, but it was MYR459 for retiree and MYR256 for dependents during 2008-10. A substantial difference between the period of 2003-07 and the period of 2008-10 has made it impossible to produce a reliable projection in the medium and long term.

As many of SOCSO staff are in their thirties and forties with many dependents and without any indications for their behaviour after retirement, it is difficult to examine the financial implication of medical benefits for retirees and their dependents. However, considering that SOCSO staff and their dependents prefer to utilizing private health service than public hospitals, it is expected that the medical cost will increase substantially in the medium and long term due to rapid increase in the cost of private practices. The medical cost for retirees and their dependents is expected to grow faster due to the fast increase in the number of retirees and the average cost for medical benefits.

General Motors in the United States was at risk of bankruptcy in the past due to its high cost of medical and pensions and this indicates that medical benefits for retirees and their dependents may incur the negative impact on the SOCSO fund in the medium and long term.

Therefore, it is desirable to adopt the conservative management in medical benefits for SOCSO retiree and dependents. As public health care with nominal out-of-pocket payments are available in Malaysia, imposing an annual ceiling on the medical benefits for retirees and their dependents could be an option from a point of view of a conservative strategy.

To examine the financial implications of staff salary increase

Based on the data of the average monthly salary of SOCSO staff by age group and sex, there is a substantial difference in salary increases among different age groups, which is attributed to different salary increase rates by year, different sex ratios among age groups and a salary difference by sex.

Following observations were made: (1) there is a sharp increase in the salary after the age of 40; (2) the salary of males is much higher than females after the age of 40; and (3) the salary of females is higher than males among the 20s and 30s age groups. Salary increase by age and by gender is different among age groups probably due to a complex combination of a different composition of staff levels among age groups and the seniority-based salary system. This makes it difficult to examine the financial implications of salary in the long term.

Supposing that salary is determined in proportion to productivity, it is recommended to adjust the salary increase for SOCSO staff periodically taking into account productivity increases in Malaysia. In regard to medical benefits for SOCSO staff and their dependents, it also needs conservative management by reflecting the analysis of medical benefits provided to SOCSO staff and their dependents. As public health care with nominal out-of-pocket payments is still available, having an annual ceiling on the private medical benefits is considered as an option for the conservative management.

Appendix 1. Description of the Employees' Social Security Scheme (as adopted for the ninth valuation)

Legislation

The Employees' Social Security Act, 1969 (as amended), providing employment injury and invalidity benefits. Coverage for invalidity benefits ceases on attainment of age 55.

Administering Organisation

The Social Security Organisation, a body corporate under a director-general appointed by the Minister of Human Resources. The general direction and superintendence of the organisation vests in a tripartite Board.

Categories of employees covered

All employees earning a wage below MYR3,000 per month when first liable for coverage. Coverage continues when the wage subsequently exceeds MYR3,000, but it is deemed to be MYR3,000 for the purposes of the Act. Public sector employees are excluded from coverage. Immigrant workers were excluded from April 1993.

Contribution provisions

Insured persons are classified into one of 34 wage classes for each of which an assumed wage is specified in ringgit. Contributions for employment injury benefits represent 1.25 per cent of the assumed wage of the wage class, and are entirely at the charge of the employer. Contributions for invalidity (and survivors') benefits represent 1 per cent, and are shared equally between the employer and the employee.

Employment injury benefits

"Employment injury" covers both industrial injuries and occupational diseases, and includes commuting accidents. The qualifying condition for benefit is that of being in insurable employment at the relevant time.

"Medical benefit", provided to victims of employment injury, includes: medical consultations and home visits, outpatient treatment, pharmaceutical supplies, inpatient treatment and prosthetic appliances.

"Temporary disablement benefit" is paid in the event of certified incapacity for work arising out of an employment injury, subject to a waiting period of three days. The daily rate of benefit is 80 per cent of the reference wage - i.e. one-thirtieth of the average assumed monthly wage over the preceding six months - subject to a minimum of MYR10 per day. The benefit is payable for seven days a week until the temporary disablement ends.

"Permanent disablement benefit" is payable if permanent disablement, partial or total, results from an employment injury. The daily rate of total disablement benefit is 90 per cent of the reference wage, subject to a minimum of MYR10 per day. The benefit rate for partial disablement is proportional to the degree of disablement. If the degree is 20 per cent or less, the benefit is commuted into a lump sum; if the degree exceeds 20 per cent, one-fifth of the benefit can be commuted. A constant attendance allowance is payable to total disablement pensioners, at 40 per cent of the benefit, subject to a maximum of MYR500 per month.

“Dependants’ benefit” is payable in the event of death arising out of an employment injury, to a widow or widower and orphans. The widow(er) receives three-fifths and the orphans two-fifths (raised to three-fifths in the absence of a widow(er)) of 90 per cent of the average assumed daily wage of the deceased. If there are no primary dependants, parents, grandparents (in the absence of parents) and siblings may claim the benefit (40 per cent for parents and grandparents, 30 per cent for siblings), subject to whole or partial dependence. Benefits for adults are generally payable for life; for orphans and siblings, until the age of 21 or until marriage before 21; for orphans, beyond age 21 until completion of the first university degree or if mentally retarded or physically handicapped.

“Funeral benefit” (MYR1,500) on death as result of an employment injury or while receiving disablement benefit.

“Rehabilitation benefit”, consisting of vocational and physical rehabilitation, is available to employees suffering permanent disablement.

Invalidity (and survivors’) benefits

“Invalidity pension” is payable, subject to qualifying contribution conditions, in the event of a serious disablement or disease of a permanent nature that is incurable or unlikely to be cured, occurring before age 55 and as a result of which an employee’s earning capacity is reduced by at least two-thirds.

Subject to a credit of at least 24 contribution months over the preceding 40 months, or contributions for at least two-thirds of the period since entry subject to a minimum of 24 months, a “full pension” is payable: 50 per cent of the reference wage, augmented by 1 per cent for every 12 contribution months in excess of 24, subject to a maximum of 65 per cent. The reference wage is the average assumed wage over the last 24 contribution months.

If the above conditions are not satisfied, but subject to a credit of contributions for at least one-third of the period since entry and a minimum of 24 months, a “reduced pension” is payable: 50 per cent of the reference wage.

In either case, the pension is subject to the minimum of MYR250 per month. If the invalidity pensioner needs constant attendance, an allowance of 40 per cent of the invalidity pension is payable, subject to the maximum of MYR500 per month.

“Invalidity grant” if qualifying conditions for pension are not satisfied, subject to a minimum of 12 contributions, the invalidity pension contributions are reimbursed with the addition of simple interest.

“Survivors’ pension” is payable on the death of an insured employee before age 55, or of an invalidity pensioner. The basic amount of the pension is the invalidity pension actually received by the deceased or which would have been payable if a claim had been made on the date of death. The provision relating to the eligible beneficiaries, and to their shares, is identical to that which applies to the dependants’ benefit.

“Funeral benefit” (MYR1,500) is payable on the death of an invalidity pensioner, or of an insured employee before age 55 subject to the satisfaction of the minimum qualifying conditions for Invalidity Pension.

“Rehabilitation benefit” (vocational and physical rehabilitation) is provided to employees who suffer invalidity.

Adjustment of benefits

If substantial changes in the general level of earnings result from substantial changes in the cost of living, the situation should be examined and steps taken to maintain the real value of benefits.

Appendix 2. Prospective cost estimation formulae (EIB)

For each benefit, the annual cost is established for each sex/age-group and then totalled over all groups to give the total annual cost. Similarly, the annual insured salary bill is calculated for each sex/age-group and totalled over all groups. The following formulae apply to a specific age x or to an age-group of which x is the central age.

Annual cost of temporary disablement benefit

$$A(x)d(x)(S(x)/30)f(x)k(x)ra$$

$A(x)$ denotes the active population
$d(x)$ denotes the contribution density (to take into account the condition of being in insurable employment at the time of the employment injury)
$S(x)$ denotes the average monthly insured salary
$f(x)$ annual frequency of temporary disablement, per person exposed to risk
$k(x)$ denotes the average duration of temporary disablement benefit
ra denotes the benefit rate = 0.8 (80 per cent of reference salary)

Annual cost of permanent disablement benefit

$$A(x)d(x)(S(x/30))g(x)t(x)a(x)rb$$

$g(x)$ denotes the annual frequency of permanent disablement, per person exposed to risk
$t(x)$ denotes the average degree of permanent disablement
$a(x)$ denotes the actuarial present value factor for permanent disablement
rb denotes the benefit rate for total disablement = 0.9 (90 per cent of reference salary)

Annual cost of dependants' benefit (widows)

$$A(x)d(x)(S(x)/30)h(x)p(x)a(y)rc$$

$h(x)$ denotes the frequency of employment injury death, per person exposed to risk
$p(x)$ denotes the proportion married
y denotes the average age of the spouse of a person aged x
$a(y)$ denotesthe actuarial present value factor for widows/widowers
rc denotes the benefit rate = 0.54 (60 per cent of 90 per cent)

Annual cost of dependants' benefit (orphans)

$$A(x)d(x)(S(x)/30)h(x)n(x)(\ rd/n(x))a(z) = A(x)d(x)(S(x)/30)h(x)a(z)rd$$

$n(x)$ denotes the average number of orphans of a person aged x
z denotes the average age of the orphans of a person aged x
$a(z)$ denotes the actuarial present value factor for orphans
rd denotes the benefit rate = 0.36 (40 per cent of 90 per cent)

Note: $n(x)$ cancels out in the formula. Secondary dependants' benefit is estimated by adding a margin to the primary dependants' benefits.

Annual cost of funeral benefit

$$1500A(x)d(x)h(x)$$

Annual insured salary bill

$$12A(x)d(x)S(x)$$

Appendix 3. Actuarial projection model

Projection methods, which present future actuarial trends in terms of time series data, including annual income and expenditure, will be used to perform actuarial valuation of the scheme. The ILO pension model (ILO-PENS) is modified in order to reflect the specific characteristics of SOCSO and then be applied.

From the employees' standpoint, they must continue to contribute a certain percentage of their income to SOCSO as a contribution once they enter the labour market. Meanwhile, if they face unexpected risks due to industrial or general accidents, benefits are provided as accident compensation and as measures to guarantee a minimum level of income. Depending on the conditions of benefits payment, beneficiaries are provided with constant attendance allowance, medical benefit and/or funeral benefit, or awarded long-term benefits throughout their lifetime. In other words, since in the case of long-term benefit, lifetime income flow of an individual can be expressed by SOCSO scheme, it is important to review the financial situation of SOCSO scheme over the life cycle. It is therefore necessary to review the sustainability of the scheme from a long-term point of view.

For this purpose, the ninth actuarial valuation adopted the ILO pension model (ILO-PENS) which makes it possible to demonstrate details of the scheme and estimate future financial situation with exogenous hypothetical variables in relation to further population projection and economic variables. The modification of the model was made to in order to fit into the SOCSO scheme.

Especially, for actuarial valuation of Invalidity and Survivors' Benefit Scheme based on partially funded system, long-term projections using an actuarial pension model is required.

Financial balance projection

The ninth actuarial valuation presents the trends in annual income and expenditure of the scheme over the next 40 years.

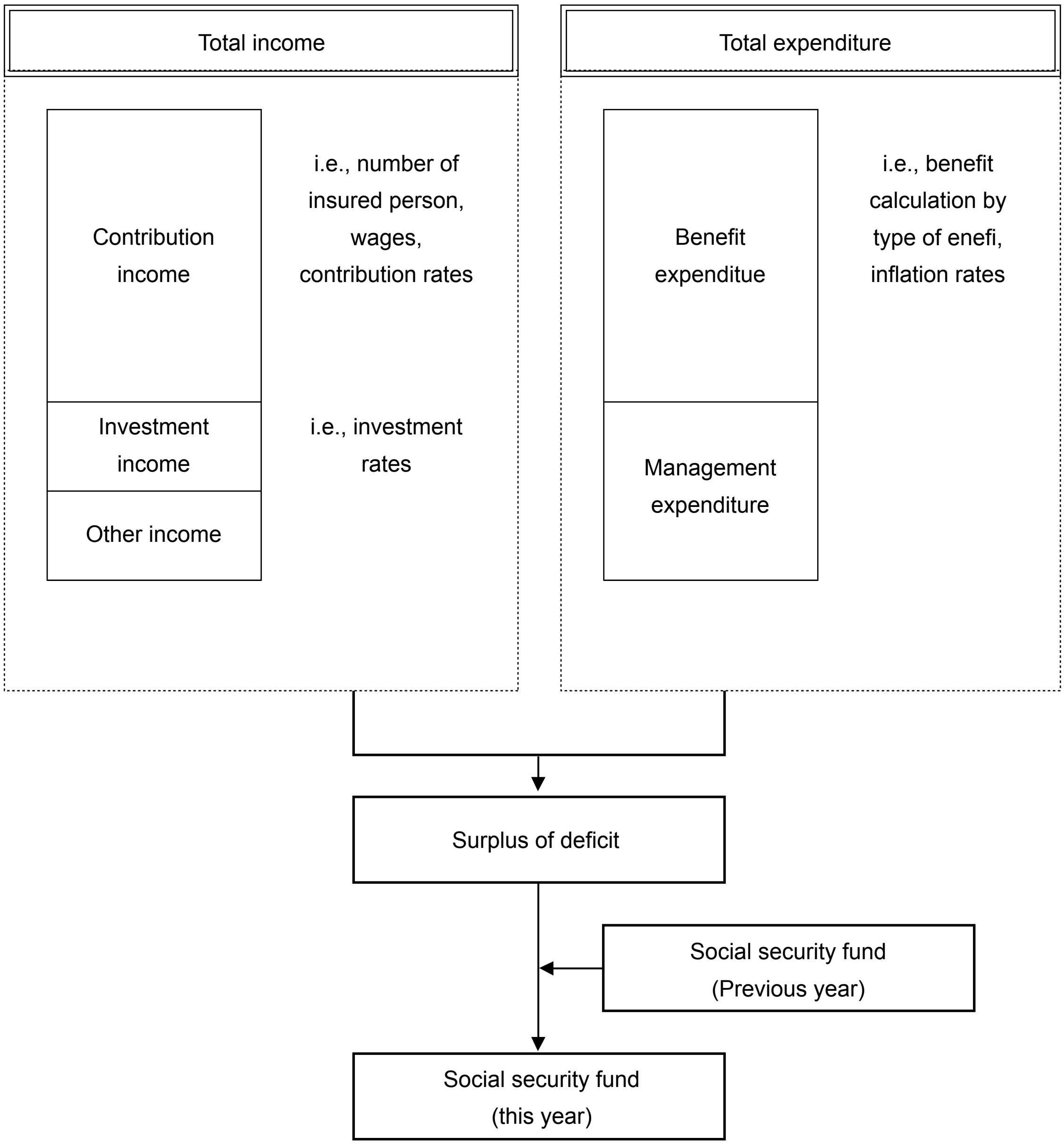
The financial structure of the scheme consists of two parts, income and expenditure, and there are three different sources of income of the scheme, which are contribution income, investment income and other income.

While contribution income is estimated on the basis of the number of employees, level of income and contribution rate, investment income is calculated by applying a return rate on investment to the previous year's fund.

The expenditure of the scheme is divided into ''benefit expenditure'' and "management costs". Benefit expenditure is further classified into "short-term benefit" and "long-term benefit" depending on the conditions under which benefit is to be paid. While short-term benefit is a lump sum benefit based on the average days for payments and level of income, long-term benefit falls into two categories, newly awarded benefits and continuously awarded benefits. Newly awarded benefits are calculated using the benefit formula which takes the income level of the individual into account, and continuously awarded benefits are readjusted, every time when the actuarial valuation of the scheme is conducted, to maintain the real value of benefit against price increases. Management cost is assumed to be a fixed proportion of the contribution income.

However, financial balance of the scheme is measured based on the annual income and expenditure of the scheme, and its results are reflected into the social security fund of the previous year to calculate the size of the fund for the year.

Chart A3-1. Flow chart of financial balance projection



Projection methodology of insured population and beneficiary

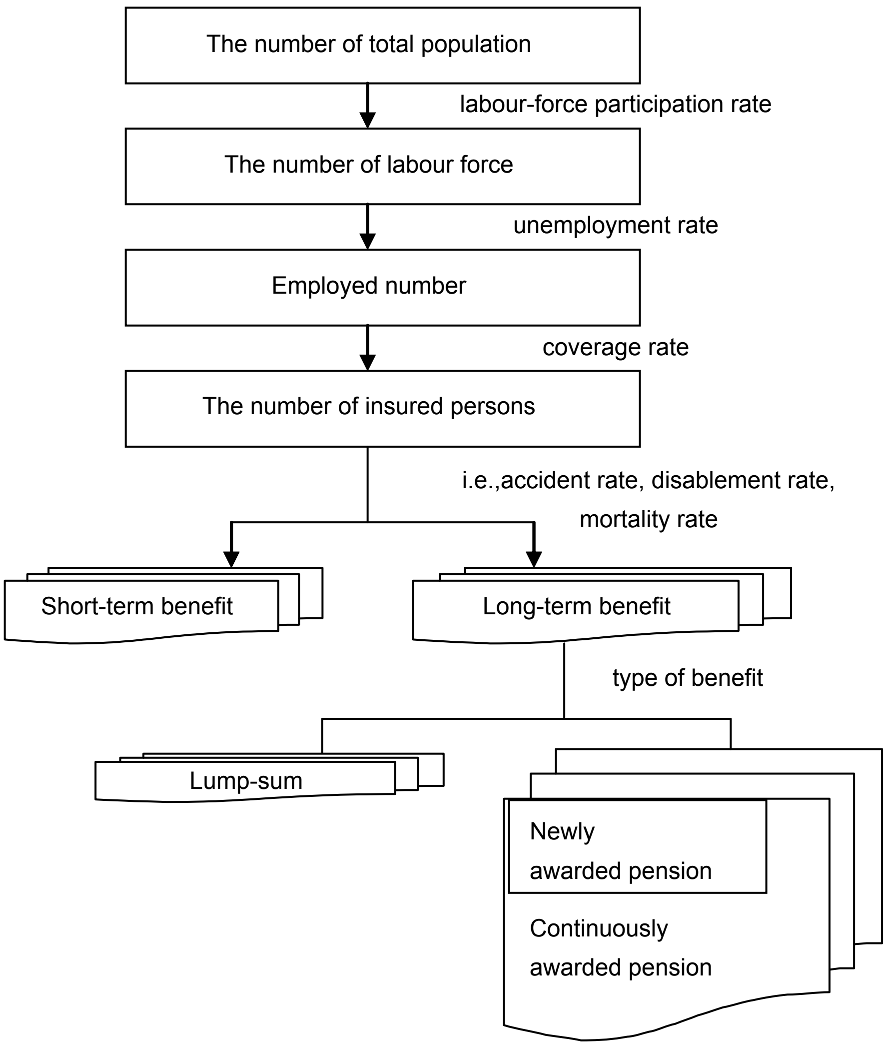
The population structure of the scheme can generally be divided into two groups, which are "the insured population" and "the beneficiary population." In order to project the number of each population, "the component method" which disaggregates total population figures into age/gender and then a population projection is applied. The projection on the size of the insured and beneficiary populations is made by tracing the benefit payment patterns and the entrance patterns of new pensioners into the scheme by each cohort.

The projection of the size of the insured population begins by applying hypothetical variables such as the fertility rate and life expectancy to estimate the total size of the population. Once the total population is estimated, the number of employees in a given year by gender and age groups is calculated by applying labour force participation rate and the unemployment rate. Among the employees, those who meet the eligibility requirements for the scheme, such as salary and age ceilings for coverage, are counted as insured and the real size of insured population is calculated by considering other conditions including coverage rate.

The number of beneficiaries, including those of short- and long-term benefits, is determined by applying the accident rate, disablement rate and mortality rate to the projected number of insured population in advance. While the number of newly awarded pensioners for each benefit is dependent on the disablement rate pertinent to each benefit, the mortality rate is applied to long-term benefits to estimate the number of continuously awarded pensioners on a yearly basis.

However, dependent's benefit and survivor's benefit are calculated by applying the mortality rate to the size of the insured population and the number of beneficiary.

Chart A3-2. Projection methodology of insured population and beneficiary



Appendix 4. PAYG cost ratio of reform options

Table A4.1 PAYG cost ratio of Employment Injury Benefits Branch

Year	Status - quo (%)	Reform options (%)		
		Wage ceiling increased to MYR5,000	Minimum rate MYR25	Minimum rate MYR30
2010	0.72	0.72	0.72	0.72
2011	0.71	0.71	0.71	0.71
2012	0.72	0.72	0.72	0.72
2013	0.74	0.67	0.75	0.76
2014	0.75	0.69	0.77	0.80
2015	0.76	0.70	0.80	0.83
2016	0.77	0.72	0.82	0.86
2017	0.79	0.74	0.84	0.90
2018	0.80	0.75	0.86	0.93
2019	0.81	0.77	0.88	0.96
2020	0.82	0.78	0.90	0.98
2021	0.83	0.79	0.91	1.00
2022	0.83	0.80	0.92	1.02
2023	0.84	0.81	0.94	1.04
2024	0.85	0.82	0.95	1.05
2025	0.85	0.83	0.96	1.07
2026	0.86	0.83	0.97	1.09
2027	0.87	0.84	0.98	1.10
2028	0.87	0.85	0.99	1.12
2029	0.88	0.86	1.00	1.13
2030	0.88	0.87	1.01	1.14
2031	0.89	0.87	1.02	1.15
2032	0.89	0.88	1.02	1.16
2033	0.90	0.88	1.03	1.17
2034	0.90	0.89	1.03	1.18
2035	0.90	0.89	1.04	1.18
2036	0.90	0.89	1.04	1.19
2037	0.90	0.89	1.04	1.19
2038	0.90	0.90	1.04	1.19
2039	0.90	0.90	1.04	1.19
2040	0.90	0.89	1.04	1.19
2041	0.90	0.89	1.03	1.19
2042	0.89	0.89	1.03	1.19
2043	0.89	0.88	1.02	1.18
2044	0.88	0.88	1.02	1.18
2045	0.88	0.88	1.01	1.17
2046	0.87	0.87	1.01	1.17
2047	0.87	0.87	1.01	1.16
2048	0.87	0.87	1.00	1.16
2049	0.87	0.87	1.00	1.16
2050	0.86	0.86	1.00	1.16

Table A 4.2 PAYG cost ratio of Invalidity and Survivors' Benefits Branch

Year	Status - quo (%)	Reform options (%)		
		Wage ceiling increased to MYR5,000	Minimum pension-MYR475	Retirement age increased to 60
2010	1.01	1.01	1.01	1.01
2011	1.07	1.07	1.07	1.07
2012	1.14	1.14	1.14	1.14
2013	1.20	1.06	1.20	1.17
2014	1.26	1.12	1.26	1.23
2015	1.31	1.18	1.31	1.28
2016	1.36	1.23	1.36	1.32
2017	1.39	1.28	1.40	1.36
2018	1.43	1.31	1.43	1.39
2019	1.45	1.35	1.46	1.42
2020	1.48	1.38	1.49	1.45
2021	1.50	1.41	1.51	1.47
2022	1.52	1.44	1.54	1.49
2023	1.54	1.46	1.56	1.51
2024	1.56	1.49	1.58	1.53
2025	1.58	1.51	1.60	1.55
2026	1.60	1.54	1.62	1.57
2027	1.62	1.56	1.64	1.59
2028	1.64	1.58	1.66	1.61
2029	1.66	1.61	1.68	1.63
2030	1.68	1.63	1.70	1.65
2031	1.69	1.65	1.72	1.67
2032	1.72	1.68	1.75	1.69
2033	1.74	1.70	1.77	1.71
2034	1.76	1.73	1.79	1.73
2035	1.78	1.75	1.82	1.75
2036	1.80	1.77	1.83	1.77
2037	1.82	1.79	1.85	1.78
2038	1.83	1.81	1.87	1.80
2039	1.84	1.82	1.88	1.81
2040	1.86	1.84	1.90	1.82
2041	1.86	1.85	1.91	1.83
2042	1.87	1.85	1.91	1.84
2043	1.87	1.86	1.92	1.84
2044	1.88	1.86	1.92	1.84
2045	1.88	1.87	1.92	1.84
2046	1.88	1.87	1.93	1.85
2047	1.88	1.88	1.93	1.85
2048	1.89	1.88	1.93	1.86
2049	1.89	1.88	1.94	1.86
2050	1.89	1.89	1.94	1.86

Appendix 5. Actuarial projections of additional reform options

Table A5.1 Demographic projections of employment injury benefits branch: wage ceiling increased to MYR4,000 in 2013

Year	Active persons	Numbers: PDB	Numbers: Dependents: Widows (ers)	Numbers: Dependents: Orphans, second dep.	Numbers: TDB	Numbers: Total	Ratio of beneficiaries over active contributors (%): PDB	Ratio: Dependents: Widows (ers)	Ratio: Dependents: Orphans, second dep.	Ratio: TDB	Ratio: Total
2010	5 505 284	10 554	10 752	28 858	55 056	105 220	0.19	0.20	0.52	1.00	1.91
2011	5 616 165	11 439	16 416	32 232	56 121	116 208	0.20	0.29	0.57	1.00	2.07
2012	5 727 021	12 321	22 050	43 897	57 212	135 479	0.22	0.39	0.77	1.00	2.37
2013	6 288 963	13 208	27 645	55 242	64 992	161 087	0.21	0.44	0.88	1.03	2.56
2014	6 406 490	14 142	33 432	66 737	66 247	180 557	0.22	0.52	1.04	1.03	2.82
2015	6 523 086	15 122	39 403	78 135	67 506	200 167	0.23	0.60	1.20	1.03	3.07
2016	6 638 246	16 109	45 322	88 694	68 746	218 871	0.24	0.68	1.34	1.04	3.30
2017	6 750 932	17 101	51 184	101 670	69 915	239 871	0.25	0.76	1.51	1.04	3.55
2018	6 859 612	18 100	56 989	113 651	70 987	259 727	0.26	0.83	1.66	1.03	3.79
2019	6 963 082	19 104	62 735	124 640	71 975	278 455	0.27	0.90	1.79	1.03	4.00
2020	7 059 955	20 113	68 430	134 694	72 903	296 140	0.28	0.97	1.91	1.03	4.19
2021	7 149 071	21 123	74 092	143 905	73 775	312 896	0.30	1.04	2.01	1.03	4.38
2022	7 229 749	22 133	79 732	152 356	74 620	328 840	0.31	1.10	2.11	1.03	4.55
2023	7 302 279	23 141	85 345	160 017	75 453	343 957	0.32	1.17	2.19	1.03	4.71
2024	7 367 283	24 145	90 931	166 839	76 267	358 182	0.33	1.23	2.26	1.04	4.86
2025	7 425 665	25 146	96 489	172 745	77 045	371 426	0.34	1.30	2.33	1.04	5.00
2026	7 478 531	26 145	102 022	177 664	77 810	383 641	0.35	1.36	2.38	1.04	5.13
2027	7 527 208	27 145	107 534	181 549	78 585	394 813	0.36	1.43	2.41	1.04	5.25
2028	7 573 247	28 148	113 028	184 461	79 412	405 049	0.37	1.49	2.44	1.05	5.35
2029	7 627 572	29 155	118 509	186 584	80 622	414 871	0.38	1.55	2.45	1.06	5.44
2030	7 693 109	30 166	123 977	188 162	82 322	424 628	0.39	1.61	2.45	1.07	5.52
2031	7 764 927	31 183	129 430	189 416	83 542	433 571	0.40	1.67	2.44	1.08	5.58
2032	7 844 558	32 210	134 864	190 406	84 765	442 244	0.41	1.72	2.43	1.08	5.64
2033	7 940 476	33 249	140 272	191 264	85 983	450 768	0.42	1.77	2.41	1.08	5.68
2034	8 046 490	34 299	145 649	191 981	87 192	459 122	0.43	1.81	2.39	1.08	5.71
2035	8 168 181	35 358	150 988	192 548	88 385	467 279	0.43	1.85	2.36	1.08	5.72
2036	8 288 662	36 423	156 283	192 943	89 634	475 282	0.44	1.89	2.33	1.08	5.73
2037	8 413 095	37 487	161 521	193 122	90 855	482 985	0.45	1.92	2.30	1.08	5.74
2038	8 540 949	38 544	166 688	193 037	92 058	490 328	0.45	1.95	2.26	1.08	5.74
2039	8 676 600	39 591	171 770	192 664	93 257	497 282	0.46	1.98	2.22	1.07	5.73
2040	8 818 711	40 627	176 766	192 048	94 464	503 905	0.46	2.00	2.18	1.07	5.71
2041	8 950 824	41 639	181 694	191 299	95 648	510 280	0.47	2.03	2.14	1.07	5.70
2042	9 088 456	42 645	186 558	190 503	96 859	516 565	0.47	2.05	2.10	1.07	5.68
2043	9 229 011	43 646	191 351	189 710	98 089	522 796	0.47	2.07	2.06	1.06	5.66
2044	9 370 320	44 643	196 066	188 958	99 329	528 997	0.48	2.09	2.02	1.06	5.65
2045	9 512 514	45 637	200 698	188 272	100 569	535 176	0.48	2.11	1.98	1.06	5.63
2046	9 643 103	46 621	205 240	187 672	101 799	541 332	0.48	2.13	1.95	1.06	5.61

Year	Active persons	Numbers: PDB	Numbers: Dependents: Widows (ers)	Numbers: Dependents: Orphans, second dep.	Numbers: TDB	Numbers: Total	Ratio of beneficiaries over active contributors (%): PDB	Ratio: Dependents: Widows (ers)	Ratio: Dependents: Orphans, second dep.	Ratio: TDB	Ratio: Total
2047	9 771 914	47 606	209 685	187 173	103 037	547 500	0.49	2.15	1.92	1.05	5.60
2048	9 896 504	48 592	214 024	186 807	104 282	553 705	0.49	2.16	1.89	1.05	5.59
2049	10 019 638	49 581	218 253	186 620	105 529	559 982	0.49	2.18	1.86	1.05	5.59
2050	10 139 127	50 573	222 362	186 648	106 780	566 363	0.50	2.19	1.84	1.05	5.59

Table A5.2 Financial projections of Employment Injury Benefits Branch: wage ceiling increased to MYR4,000 in 2013

Year	Insured sal Bill	Amounts (MYR million): PDB	Amounts: Dependents: Widows (ers)	Amounts: Dependents: Orphans, second dep.	Amounts: TDB	Amounts: Total	PAYG cost rate (%): PDB	PAYG: Dependents: Widows (ers)	PAYG: Dependents: Orphans, second dep.	PAYG: TDB	PAYG: Total
2010	88 938	351	78	103	106	637	0.39	0.09	0.12	0.12	0.72
2011	95 302	363	102	95	112	673	0.38	0.11	0.10	0.12	0.71
2012	102 112	376	128	117	117	739	0.37	0.13	0.11	0.11	0.72
2013	118 443	390	155	140	142	826	0.33	0.13	0.12	0.12	0.70
2014	126 818	405	185	165	149	903	0.32	0.15	0.13	0.12	0.71
2015	135 737	420	218	192	156	987	0.31	0.16	0.14	0.12	0.73
2016	145 220	437	253	219	164	1 073	0.30	0.17	0.15	0.11	0.74
2017	155 294	455	290	260	172	1 176	0.29	0.19	0.17	0.11	0.76
2018	165 968	473	329	301	180	1 283	0.29	0.20	0.18	0.11	0.77
2019	177 226	493	370	343	188	1 393	0.28	0.21	0.19	0.11	0.79
2020	189 040	513	413	384	196	1 507	0.27	0.22	0.20	0.10	0.80
2021	201 382	535	459	426	205	1 624	0.27	0.23	0.21	0.10	0.81
2022	214 229	558	508	468	213	1 747	0.26	0.24	0.22	0.10	0.82
2023	227 559	581	559	511	222	1 873	0.26	0.25	0.22	0.10	0.82
2024	241 363	607	613	553	230	2 004	0.25	0.25	0.23	0.10	0.83
2025	255 644	633	671	596	245	2 145	0.25	0.26	0.23	0.10	0.84
2026	270 407	661	732	638	260	2 290	0.24	0.27	0.24	0.10	0.85
2027	285 666	690	796	679	275	2 441	0.24	0.28	0.24	0.10	0.85
2028	301 439	721	864	720	292	2 597	0.24	0.29	0.24	0.10	0.86
2029	317 878	754	936	762	310	2 761	0.24	0.29	0.24	0.10	0.87
2030	335 011	788	1 012	804	329	2 934	0.24	0.30	0.24	0.10	0.88
2031	353 234	825	1 093	847	349	3 114	0.23	0.31	0.24	0.10	0.88
2032	372 317	863	1 178	892	370	3 303	0.23	0.32	0.24	0.10	0.89
2033	392 573	904	1 267	938	391	3 500	0.23	0.32	0.24	0.10	0.89
2034	413 806	947	1 361	986	413	3 708	0.23	0.33	0.24	0.10	0.90
2035	436 245	993	1 460	1 034	436	3 924	0.23	0.33	0.24	0.10	0.90
2036	460 671	1 041	1 564	1 084	461	4 150	0.23	0.34	0.24	0.10	0.90
2037	486 206	1 092	1 673	1 134	487	4 386	0.22	0.34	0.23	0.10	0.90

Year	Insured sal Bill	Amounts (MYR million)					PAYG cost rate (%)				
		PDB	Dependents		TDB	Total	PDB	Dependents		TDB	Total
			Widows (ers)	Orphans, second dep.				Widows (ers)	Orphans, second dep.		
2038	512 909	1 145	1 786	1 185	513	4 629	0.22	0.35	0.23	0.10	0.90
2039	541 198	1 201	1 905	1 235	540	4 880	0.22	0.35	0.23	0.10	0.90
2040	571 119	1 258	2 028	1 285	569	5 140	0.22	0.36	0.22	0.10	0.90
2041	602 579	1 319	2 157	1 335	599	5 410	0.22	0.36	0.22	0.10	0.90
2042	636 573	1 382	2 292	1 386	631	5 691	0.22	0.36	0.22	0.10	0.89
2043	672 439	1 448	2 433	1 439	664	5 983	0.22	0.36	0.21	0.10	0.89
2044	710 146	1 517	2 579	1 494	698	6 288	0.21	0.36	0.21	0.10	0.89
2045	749 797	1 590	2 733	1 550	734	6 607	0.21	0.36	0.21	0.10	0.88
2046	790 545	1 666	2 892	1 609	773	6 940	0.21	0.37	0.20	0.10	0.88
2047	833 089	1 746	3 058	1 671	813	7 288	0.21	0.37	0.20	0.10	0.87
2048	877 193	1 830	3 231	1 736	855	7 652	0.21	0.37	0.20	0.10	0.87
2049	923 129	1 919	3 411	1 804	898	8 032	0.21	0.37	0.20	0.10	0.87
2050	970 689	2 012	3 598	1 876	944	8 430	0.21	0.37	0.19	0.10	0.87

Table A5.3 Demographic projections of Invalidity and Survivors' Benefits Branch: wage ceiling increased to MYR4,000 in 2013

Year	Active persons	Numbers				Ratio of beneficiaries over active contributors (%)			
		Invalids	Widows (ers)	Orphans, second dep.	Total	Invalids	Widows (ers)	Orphans, second dep.	Total
2010	5 230 461	33 717	60 420	90 425	184 562	0.64	1.16	1.73	3.53
2011	5 327 872	37 052	65 845	95 862	198 758	0.70	1.24	1.80	3.73
2012	5 425 270	40 369	71 213	107 095	218 677	0.74	1.31	1.97	4.03
2013	5 973 761	43 698	76 527	117 996	238 221	0.73	1.28	1.98	3.99
2014	6 078 669	47 203	82 012	129 035	258 250	0.78	1.35	2.12	4.25
2015	6 183 391	50 882	87 660	139 974	278 516	0.82	1.42	2.26	4.50
2016	6 287 504	54 570	93 234	150 072	297 877	0.87	1.48	2.39	4.74
2017	6 390 012	58 267	98 727	159 219	316 213	0.91	1.55	2.49	4.95
2018	6 489 227	61 972	104 137	167 369	333 477	0.95	1.60	2.58	5.14
2019	6 583 682	65 682	109 459	174 522	349 663	1.00	1.66	2.65	5.31
2020	6 671 866	69 396	114 700	180 733	364 828	1.04	1.72	2.71	5.47
2021	6 752 622	73 113	119 873	186 095	379 080	1.08	1.78	2.76	5.61
2022	6 825 219	76 830	124 986	190 693	392 509	1.13	1.83	2.79	5.75
2023	6 890 190	80 548	130 036	194 496	405 080	1.17	1.89	2.82	5.88
2024	6 948 538	84 268	135 022	197 454	416 744	1.21	1.94	2.84	6.00
2025	7 001 336	87 997	139 942	199 486	427 426	1.26	2.00	2.85	6.10
2026	7 049 497	91 745	144 802	200 520	437 067	1.30	2.05	2.84	6.20
2027	7 094 231	95 520	149 605	200 508	445 633	1.35	2.11	2.83	6.28
2028	7 136 773	99 333	154 358	199 512	453 203	1.39	2.16	2.80	6.35
2029	7 187 614	103 192	159 067	197 718	459 976	1.44	2.21	2.75	6.40

Year	Active persons	Numbers				Ratio of beneficiaries over active contributors (%)			
		Invalids	Widows (ers)	Orphans, second dep.	Total	Invalids	Widows (ers)	Orphans, second dep.	Total
2030	7 249 342	107 101	163 735	195 375	466 212	1.48	2.26	2.70	6.43
2031	7 317 042	111 063	168 365	192 708	472 136	1.52	2.30	2.63	6.45
2032	7 392 247	115 080	172 957	193 788	481 824	1.56	2.34	2.62	6.52
2033	7 482 788	119 150	177 508	194 739	491 397	1.59	2.37	2.60	6.57
2034	7 581 579	123 268	182 020	195 552	500 839	1.63	2.40	2.58	6.61
2035	7 693 722	127 426	186 490	196 215	510 130	1.66	2.42	2.55	6.63
2036	7 802 408	131 614	190 919	196 707	519 240	1.69	2.45	2.52	6.65
2037	7 912 947	135 821	195 301	196 985	528 107	1.72	2.47	2.49	6.67
2038	8 025 371	140 030	199 627	196 999	536 656	1.74	2.49	2.45	6.69
2039	8 144 919	144 226	203 889	196 722	544 837	1.77	2.50	2.42	6.69
2040	8 270 828	148 402	208 091	196 198	552 691	1.79	2.52	2.37	6.68
2041	8 386 610	152 475	212 254	195 535	560 263	1.82	2.53	2.33	6.68
2042	8 507 752	156 407	216 388	194 819	567 614	1.84	2.54	2.29	6.67
2043	8 632 155	160 171	220 492	194 099	574 762	1.86	2.55	2.25	6.66
2044	8 758 300	163 842	224 563	193 415	581 820	1.87	2.56	2.21	6.64
2045	8 886 701	167 442	228 598	192 794	588 834	1.88	2.57	2.17	6.63
2046	9 005 044	171 200	232 593	192 257	596 049	1.90	2.58	2.13	6.62
2047	9 123 358	174 857	236 543	191 821	603 221	1.92	2.59	2.10	6.61
2048	9 238 645	178 410	240 441	191 516	610 368	1.93	2.60	2.07	6.61
2049	9 352 743	181 858	244 283	191 386	617 528	1.94	2.61	2.05	6.60
2050	9 463 016	185 202	248 060	191 468	624 730	1.96	2.62	2.02	6.60

Table A5.4 Financial projections of Invalidity and Survivors' Benefits Branch: wage ceiling increased to MYR4,000 in 2013

Year	Insured sal Bill	Amounts (MYR million)				PAYG cost rate (%)			
		Invalids	Widows (ers)	Orphans, second dep.	Total	Invalids	Widows (ers)	Orphans, second dep.	Total dep.
2010	90 095	339	315	258	912	0.38	0.35	0.29	1.01
2011	96 415	386	361	286	1 032	0.40	0.37	0.30	1.07
2012	103 174	434	407	336	1 178	0.42	0.39	0.33	1.14
2013	119 951	485	457	388	1 330	0.40	0.38	0.32	1.11
2014	128 306	542	510	444	1 496	0.42	0.40	0.35	1.17
2015	137 211	604	568	503	1 675	0.44	0.41	0.37	1.22
2016	146 692	671	629	563	1 863	0.46	0.43	0.38	1.27
2017	156 776	742	693	623	2 058	0.47	0.44	0.40	1.31
2018	167 469	818	761	682	2 261	0.49	0.45	0.41	1.35
2019	178 749	899	832	741	2 472	0.50	0.47	0.41	1.38
2020	190 581	985	907	800	2 692	0.52	0.48	0.42	1.41
2021	202 936	1 077	986	858	2 921	0.53	0.49	0.42	1.44
2022	215 785	1 175	1 070	917	3 162	0.54	0.50	0.42	1.47

Year	Insured sal Bill	Amounts (MYR million)				PAYG cost rate (%)			
		Invalids	Widows (ers)	Orphans, second dep.	Total	Invalids	Widows (ers)	Orphans, second dep.	Total dep.
2023	229 115	1 280	1 158	975	3 413	0.56	0.51	0.43	1.49
2024	242 928	1 391	1 251	1 034	3 676	0.57	0.52	0.43	1.51
2025	257 232	1 510	1 349	1 091	3 950	0.59	0.52	0.42	1.54
2026	272 030	1 636	1 453	1 148	4 237	0.60	0.53	0.42	1.56
2027	287 335	1 772	1 563	1 202	4 537	0.62	0.54	0.42	1.58
2028	303 152	1 916	1 679	1 256	4 852	0.63	0.55	0.41	1.60
2029	319 635	2 072	1 802	1 310	5 184	0.65	0.56	0.41	1.62
2030	336 799	2 238	1 931	1 366	5 535	0.66	0.57	0.41	1.64
2031	355 079	2 416	2 069	1 424	5 909	0.68	0.58	0.40	1.66
2032	374 222	2 607	2 214	1 501	6 322	0.70	0.59	0.40	1.69
2033	394 535	2 811	2 366	1 582	6 759	0.71	0.60	0.40	1.71
2034	415 755	3 029	2 528	1 665	7 222	0.73	0.61	0.40	1.74
2035	438 085	3 262	2 698	1 751	7 710	0.74	0.62	0.40	1.76
2036	462 355	3 508	2 876	1 839	8 224	0.76	0.62	0.40	1.78
2037	487 606	3 770	3 064	1 928	8 762	0.77	0.63	0.40	1.80
2038	513 922	4 046	3 260	2 018	9 325	0.79	0.63	0.39	1.81
2039	541 792	4 337	3 466	2 108	9 911	0.80	0.64	0.39	1.83
2040	571 301	4 643	3 681	2 197	10 521	0.81	0.64	0.38	1.84
2041	602 343	4 963	3 906	2 287	11 157	0.82	0.65	0.38	1.85
2042	635 783	5 297	4 143	2 379	11 819	0.83	0.65	0.37	1.86
2043	671 097	5 646	4 390	2 473	12 510	0.84	0.65	0.37	1.86
2044	708 293	6 010	4 650	2 570	13 230	0.85	0.66	0.36	1.87
2045	747 510	6 390	4 921	2 671	13 983	0.85	0.66	0.36	1.87
2046	787 876	6 790	5 205	2 775	14 770	0.86	0.66	0.35	1.87
2047	830 155	7 206	5 502	2 883	15 592	0.87	0.66	0.35	1.88
2048	874 058	7 640	5 812	2 996	16 448	0.87	0.66	0.34	1.88
2049	919 792	8 091	6 136	3 115	17 341	0.88	0.67	0.34	1.89
2050	967 091	8 560	6 473	3 240	18 273	0.89	0.67	0.34	1.89

Table A5.5 Financial projection of Invalidity and Survivors' Benefits Branch: minimum pension MYR475 in 2013

Year	Insured sal Bill	Amounts (MYR million)				PAYG cost rate (%)			
		Invalids	Widows (ers)	Orphans, second dep.	Total	Invalids	Widows (ers)	Orphans, second dep.	Total
2010	90 095	339	315	258	912	0.38	0.35	0.29	1.01
2011	96 415	386	360	286	1 032	0.40	0.37	0.30	1.07
2012	103 174	434	407	336	1 177	0.42	0.39	0.33	1.14
2013	110 482	495	464	394	1 397	0.45	0.42	0.36	1.26
2014	118 179	551	517	448	1 492	0.47	0.44	0.38	1.26
2015	126 382	611	572	503	1 661	0.48	0.45	0.40	1.31

Year	Insured sal Bill	Amounts (MYR million)				PAYG cost rate (%)			
		Invalids	Widows (ers)	Orphans, second dep.	Total	Invalids	Widows (ers)	Orphans, second dep.	Total
2016	135 113	676	630	558	1 837	0.50	0.47	0.41	1.36
2017	144 401	745	690	613	2 020	0.52	0.48	0.42	1.40
2018	154 248	818	754	667	2 211	0.53	0.49	0.43	1.43
2019	164 634	896	821	721	2 408	0.54	0.50	0.44	1.46
2020	175 529	980	891	774	2 614	0.56	0.51	0.44	1.49
2021	186 904	1 068	964	826	2 829	0.57	0.52	0.44	1.51
2022	198 733	1 163	1 042	879	3 054	0.59	0.52	0.44	1.54
2023	211 003	1 264	1 124	931	3 289	0.60	0.53	0.44	1.56
2024	223 715	1 371	1 210	982	3 535	0.61	0.54	0.44	1.58
2025	236 879	1 486	1 301	1 033	3 792	0.63	0.55	0.44	1.60
2026	250 494	1 608	1 397	1 082	4 060	0.64	0.56	0.43	1.62
2027	264 575	1 738	1 498	1 130	4 341	0.66	0.57	0.43	1.64
2028	279 126	1 877	1 605	1 176	4 635	0.67	0.57	0.42	1.66
2029	294 287	2 026	1 717	1 223	4 946	0.69	0.58	0.42	1.68
2030	310 074	2 186	1 836	1 271	5 275	0.70	0.59	0.41	1.70
2031	326 890	2 357	1 961	1 321	5 625	0.72	0.60	0.40	1.72
2032	344 500	2 542	2 094	1 391	6 014	0.74	0.61	0.40	1.75
2033	363 189	2 740	2 233	1 464	6 426	0.75	0.61	0.40	1.77
2034	382 717	2 951	2 380	1 539	6 862	0.77	0.62	0.40	1.79
2035	403 273	3 176	2 534	1 617	7 321	0.79	0.63	0.40	1.82
2036	425 621	3 416	2 696	1 697	7 805	0.80	0.63	0.40	1.83
2037	448 877	3 669	2 868	1 778	8 313	0.82	0.64	0.40	1.85
2038	473 119	3 937	3 049	1 859	8 843	0.83	0.64	0.39	1.87
2039	498 799	4 220	3 238	1 940	9 397	0.85	0.65	0.39	1.88
2040	525 992	4 517	3 435	2 021	9 973	0.86	0.65	0.38	1.90
2041	554 596	4 827	3 642	2 104	10 573	0.87	0.66	0.38	1.91
2042	585 414	5 152	3 859	2 188	11 198	0.88	0.66	0.37	1.91
2043	617 963	5 490	4 086	2 275	11 851	0.89	0.66	0.37	1.92
2044	652 249	5 843	4 324	2 364	12 531	0.90	0.66	0.36	1.92
2045	688 402	6 213	4 573	2 456	13 242	0.90	0.66	0.36	1.92
2046	725 576	6 601	4 834	2 552	13 987	0.91	0.67	0.35	1.93
2047	764 510	7 006	5 106	2 651	14 763	0.92	0.67	0.35	1.93
2048	804 939	7 426	5 391	2 755	15 572	0.92	0.67	0.34	1.93
2049	847 052	7 864	5 688	2 864	16 416	0.93	0.67	0.34	1.94
2050	890 606	8 320	5 997	5 958	17 296	0.93	0.67	0.67	1.94

Appendix 6. Projections of SOCSO income and expenditure

1. Status-quo projections

Table A6.1 Projections of SOCSO income and expenditure (Status-quo)

Unit: MYR million

Year	SOCSO fund	Income				Expenditure		
		Contribution	Investment return	Other income	Total	Benefit	Administration	Total
2010	90 095	339	315	258	912	1 700	238	1 938
2011	96 415	386	360	286	1 032	1 867	256	2 123
2012	103 174	434	407	336	1 177	2 090	274	2 363
2013	110 482	495	464	394	1 397	2 324	294	2 618
2014	118 179	551	517	448	1 492	2 570	314	2 884
2015	126 382	611	572	503	1 661	2 828	336	3 163
2016	135 113	676	630	558	1 837	3 094	359	3 455
2017	144 401	745	690	613	2 020	3 387	384	3 771
2018	154 248	818	754	667	2 211	3 688	411	4 099
2019	164 634	896	821	721	2 408	4 002	438	4 440
2020	175 529	980	891	774	2 614	4 327	467	4 794
2021	186 904	1 068	964	826	2 829	4 664	498	5 162
2022	198 733	1 163	1 042	879	3 054	5 018	530	5 547
2023	211 003	1 264	1 124	931	3 289	5 384	563	5 947
2024	223 715	1 371	1 210	982	3 535	5 765	597	6 362
2025	236 879	1 486	1 301	1 033	3 792	6 168	632	6 799
2026	250 494	1 608	1 397	1 082	4 060	6 585	668	7 253
2027	264 575	1 738	1 498	1 130	4 341	7 021	706	7 726
2028	279 126	1 877	1 605	1 176	4 635	7 475	745	8 219
2029	294 287	2 026	1 717	1 223	4 946	7 952	785	8 736
2030	310 074	2 186	1 836	1 271	5 275	8 456	827	9 283
2031	326 890	2 357	1 961	1 321	5 625	8 988	872	9 860
2032	344 500	2 542	2 094	1 391	6 014	9 568	919	10 487
2033	363 189	2 740	2 233	1 464	6 426	10 182	969	11 151
2034	382 717	2 951	2 380	1 539	6 862	10 827	1 022	11 849
2035	403 273	3 176	2 534	1 617	7 321	11 507	1 076	12 583
2036	425 621	3 416	2 696	1 697	7 805	12 222	1 137	13 359
2037	448 877	3 669	2 868	1 778	8 313	12 970	1 199	14 168
2038	473 119	3 937	3 049	1 859	8 843	13 748	1 264	15 013
2039	498 799	4 220	3 238	1 940	9 397	14 558	1 334	15 892
2040	525 992	4 517	3 435	2 021	9 973	15 400	1 407	16 807
2041	554 596	4 827	3 642	2 104	10 573	16 276	1 485	17 761
2042	585 414	5 152	3 859	2 188	11 198	17 191	1 568	18 759
2043	617 963	5 490	4 086	2 275	11 851	18 145	1 656	19 800
2044	652 249	5 843	4 324	2 364	12 531	19 141	1 748	20 890
2045	688 402	6 213	4 573	2 456	13 242	20 181	1 845	22 027

Year	SOCSO fund	Income				Expenditure		
		Contribution	Investment return	Other income	Total	Benefit	Administration	Total
2046	725 576	6 601	4 834	2 552	13 987	21 269	1 946	23 215
2047	764 510	7 006	5 106	2 651	14 763	22 404	2 050	24 454
2048	804 939	7 426	5 391	2 755	15 572	23 587	2 159	25 745
2049	847 052	7 864	5 688	2 864	16 416	24 822	2 271	27 094
2050	890 606	8 320	5 997	5 958	17 296	26 109	2 388	28 499

Table A6.3 Projections of Invalidity and Survivors' Benefits Branch income and expenditure (Status-quo)

Unit: MYR million

Year	fund	Income				Expenditure		
		Contribution	Investment return	Other income	Total	Benefit	Administration	Total
2010	7 731	904	396	13	1 312	1 046	107	1 153
2011	7 786	964	352	14	1 330	1 159	115	1 274
2012	7 751	1 032	354	15	1 401	1 313	123	1 436
2013	7 617	1 105	353	16	1 473	1 475	132	1 607
2014	7 376	1 182	347	17	1 545	1 645	141	1 786
2015	7 019	1 264	336	18	1 617	1 824	151	1 974
2016	6 539	1 351	319	19	1 690	2 009	161	2 171
2017	5 926	1 444	298	21	1 762	2 203	172	2 375
2018	5 173	1 542	270	22	1 834	2 403	184	2 587
2019	4 270	1 646	235	23	1 905	2 612	196	2 808
2020	3 206	1 755	194	25	1 975	2 829	209	3 038
2021	1 970	1 869	146	27	2 042	3 054	223	3 277
2022	548	1 987	90	28	2 105	3 291	237	3 528
2023		2 110	25	30	2 165	3 537	252	3 789
2024		2 237		32	2 269	3 794	267	4 061
2025		2 369		34	2 403	4 063	283	4 345
2026		2 505		36	2 541	4 342	299	4 641
2027		2 646		38	2 684	4 635	316	4 950
2028		2 791		40	2 831	4 941	333	5 274
2029		2 943		42	2 985	5 263	351	5 614
2030		3 101		44	3 145	5 604	370	5 974
2031		3 269		47	3 316	5 966	390	6 356
2032		3 445		49	3 494	6 367	411	6 778
2033		3 632		52	3 684	6 793	433	7 226
2034		3 827		55	3 882	7 242	457	7 699
2035		4 033		58	4 090	7 716	481	8 197
2036		4 256		61	4 317	8 216	508	8 724
2037		4 489		64	4 553	8 740	535	9 275
2038		4 731		68	4 799	9 287	564	9 851
2039		4 988		71	5 059	9 857	595	10 452

Year	fund	Income				Expenditure		
		Contribution	Investment return	Other income	Total	Benefit	Administration	Total
2040		5 260		75	5 335	10 452	627	11 079
2041		5 546		79	5 625	11 071	662	11 733
2042		5 854		84	5 938	11 718	698	12 416
2043		6 180		88	6 268	12 392	737	13 129
2044		6 522		93	6 616	13 097	778	13 875
2045		6 884		98	6 982	13 832	821	14 654
2046		7 256		104	7 359	14 602	866	15 468
2047		7 645		109	7 754	15 405	912	16 317
2048		8 049		115	8 164	16 241	960	17 201
2049		8 471		121	8 591	17 113	1 010	18 124
2050		8 906		127	9 033	18 022	1 062	19 085

Table A6.4 PAYG cost ratio (Status-quo)

Year	A+B (%)	Employment Injury benefits (%)			Invalidity and survivors' benefits (%)		
		Benefit	Administration	Total (A)	Benefit	Administration	Total (B)
2010	2.16	0.74	0.15	0.88	1.16	0.12	1.28
2011	2.21	0.74	0.15	0.89	1.20	0.12	1.32
2012	2.30	0.76	0.15	0.91	1.27	0.12	1.39
2013	2.37	0.78	0.15	0.92	1.34	0.12	1.45
2014	2.45	0.79	0.15	0.94	1.39	0.12	1.51
2015	2.51	0.80	0.15	0.95	1.44	0.12	1.56
2016	2.57	0.81	0.15	0.96	1.49	0.12	1.61
2017	2.61	0.82	0.15	0.97	1.53	0.12	1.64
2018	2.67	0.84	0.15	0.99	1.56	0.12	1.68
2019	2.71	0.85	0.15	1.00	1.59	0.12	1.71
2020	2.73	0.86	0.15	1.00	1.61	0.12	1.73
2021	2.76	0.86	0.15	1.01	1.63	0.12	1.75
2022	2.80	0.87	0.15	1.02	1.66	0.12	1.78
2023	2.83	0.88	0.15	1.03	1.68	0.12	1.80
2024	2.85	0.88	0.15	1.03	1.70	0.12	1.82
2025	2.87	0.89	0.15	1.04	1.72	0.12	1.83
2026	2.89	0.90	0.15	1.04	1.73	0.12	1.85
2027	2.92	0.90	0.15	1.05	1.75	0.12	1.87
2028	2.95	0.91	0.15	1.06	1.77	0.12	1.89
2029	2.97	0.92	0.15	1.06	1.79	0.12	1.91
2030	3.00	0.92	0.15	1.07	1.81	0.12	1.93
2031	3.01	0.93	0.15	1.07	1.83	0.12	1.94
2032	3.05	0.93	0.15	1.08	1.85	0.12	1.97
2033	3.07	0.93	0.15	1.08	1.87	0.12	1.99
2034	3.10	0.94	0.15	1.09	1.89	0.12	2.01
2035	3.12	0.94	0.15	1.09	1.91	0.12	2.03
2036	3.14	0.94	0.15	1.09	1.93	0.12	2.05

Year	A+B (%)	Employment injury benefits (%)			Invalidity and survivors' benefits (%)		
		Benefit	Administration	Total (A)	Benefit	Administration	Total (B)
2037	3.16	0.94	0.15	1.09	1.95	0.12	2.07
2038	3.17	0.94	0.15	1.09	1.96	0.12	2.08
2039	3.19	0.94	0.15	1.09	1.98	0.12	2.10
2040	3.19	0.94	0.15	1.08	1.99	0.12	2.11
2041	3.20	0.93	0.15	1.08	2.00	0.12	2.12
2042	3.20	0.93	0.15	1.08	2.00	0.12	2.12
2043	3.19	0.92	0.15	1.07	2.01	0.12	2.12
2044	3.20	0.92	0.15	1.07	2.01	0.12	2.13
2045	3.19	0.92	0.15	1.06	2.01	0.12	2.13
2046	3.19	0.91	0.15	1.06	2.01	0.12	2.13
2047	3.19	0.91	0.15	1.06	2.01	0.12	2.13
2048	3.19	0.91	0.15	1.05	2.02	0.12	2.14
2049	3.19	0.90	0.15	1.05	2.02	0.12	2.14
2050	3.19	0.90	0.15	1.05	2.02	0.12	2.14

Projections of reform options

Reform options

- minimum pension MYR475 in 2013
- wage ceiling increased to MYR5,000 in 2013
- CPI adjustment of pensions

Table A6.5 Projections of SOCSO income and expenditure (Reform options)

Unit: MYR million

Year	SOCSO fund	Income				Expenditure		
		Contribution	Investment return	other income	Total	Benefit	Administration	Total
2010	18 553	2 008	880	29	2 916	1 700	239	1 939
2011	19 461	2 155	845	31	3 031	1 867	256	2 123
2012	20 266	2 308	886	33	3 227	2 149	274	2 423
2013	21 122	2 645	923	38	3 605	2 435	314	2 748
2014	21 916	2 830	962	40	3 833	2 703	336	3 039
2015	22 627	3 028	998	43	4 069	2 999	359	3 358
2016	23 251	3 239	1 031	46	4 315	3 307	384	3 691
2017	23 769	3 463	1 059	49	4 571	3 642	411	4 052
2018	24 176	3 700	1 083	53	4 835	3 989	439	4 428
2019	24 466	3 950	1 101	56	5 107	4 349	469	4 817
2020	24 631	4 212	1 114	60	5 386	4 722	500	5 222
2021	24 661	4 487	1 122	64	5 672	5 110	532	5 642
2022	26 171	4 772	1 123	68	5 963	5 515	566	6 081
2023	27 974	5 068	1 192	72	6 332	5 936	601	6 537
2024	29 877	5 374	1 274	76	6 725	6 374	638	7 012

Year	SOCSO fund	Income				Expenditure		
		Contribution	Investment return	Other income	Total	Benefit	Administra-tion	Total
2025	31 881	5 692	1 361	81	7 133	6 835	675	7 510
2026	33 990	6 020	1 452	85	7 557	7 314	714	8 028
2027	36 209	6 359	1 548	90	7 997	7 813	754	8 567
2028	38 544	6 710	1 649	95	8 454	8 333	796	9 129
2029	41 000	7 075	1 755	100	8 931	8 879	839	9 718
2030	43 581	7 456	1 867	106	9 428	9 455	884	10 339
2031	46 298	7 861	1 984	112	9 957	10 061	933	10 994
2032	49 158	8 285	2 108	118	10 511	10 725	983	11 708
2033	52 171	8 736	2 238	124	11 097	11 427	1 036	12 463
2034	55 346	9 207	2 375	131	11 713	12 165	1 092	13 257
2035	58 695	9 704	2 520	138	12 361	12 941	1 151	14 092
2036	62 237	10 245	2 672	145	13 062	13 756	1 215	14 971
2037	65 985	10 809	2 833	153	13 796	14 617	1 282	15 899
2038	69 953	11 398	3 004	162	14 564	15 515	1 352	16 867
2039	74 162	12 022	3 184	171	15 377	16 448	1 426	17 874
2040	78 631	12 683	3 376	180	16 239	17 419	1 505	18 923
2041	83 381	13 377	3 579	190	17 146	18 430	1 587	20 017
2042	88 441	14 127	3 795	200	18 123	19 486	1 676	21 162
2043	93 835	14 918	4 026	212	19 155	20 587	1 770	22 357
2044	99 586	15 751	4 271	224	20 245	21 737	1 868	23 605
2045	105 718	16 627	4 533	236	21 396	22 940	1 972	24 912
2046	112 245	17 528	4 812	249	22 589	24 196	2 079	26 276
2047	119 190	18 470	5 109	262	23 841	25 508	2 191	27 699
2048	126 571	19 448	5 425	276	25 149	26 880	2 307	29 188
2049	134 409	20 466	5 761	290	26 517	28 313	2 428	30 741
2050	142 726	21 519	6 118	305	27 942	29 808	2 553	32 361

Table A6.7 Projections of invalidity and survivors' benefits branch income and expenditure (Reform options)

Unit: MYR million

Year	fund	Income				Expenditure		
		Contribution	Investment return	Other income	Total	Benefit	Administration	Total
2010	7 731	904	396	13	1 312	1 046	107	1 153
2011	7 786	964	352	14	1 330	1 159	115	1 274
2012	7 712	1 032	354	15	1 401	1 352	123	1 475
2013	7 511	1 105	351	16	1 471	1 541	132	1 673
2014	7 184	1 182	342	17	1 540	1 726	141	1 867
2015	6 713	1 264	327	18	1 609	1 929	151	2 080
2016	6 086	1 351	305	19	1 676	2 142	161	2 303
2017	5 291	1 444	277	21	1 742	2 364	172	2 536
2018	4 318	1 542	241	22	1 805	2 594	184	2 778

Year	fund	Income				Expenditure		
		Contribution	Investment return	Other income	Total	Benefit	Administration	Total
2019	3 154	1 646	196	23	1 866	2 834	196	3 030
2020	1 786	1 755	144	25	1 924	3 083	209	3 292
2021	198	1 869	81	27	1 977	3 342	223	3 565
2022		1 987	9	28	2 025	3 614	237	3 851
2023		2 110		30	2 140	3 897	252	4 149
2024		2 237		32	2 269	4 192	267	4 459
2025		2 369		34	2 403	4 501	283	4 783
2026		2 505		36	2 541	4 822	299	5 121
2027		2 646		38	2 684	5 157	316	5 473
2028		2 791		40	2 831	5 508	333	5 841
2029		2 943		42	2 985	5 877	351	6 229
2030		3 101		44	3 145	6 267	370	6 637
2031		3 269		47	3 316	6 679	390	7 069
2032		3 445		49	3 494	7 141	411	7 552
2033		3 632		52	3 684	7 629	433	8 063
2034		3 827		55	3 882	8 145	457	8 601
2035		4 033		58	4 090	8 688	481	9 169
2036		4 256		61	4 317	9 260	508	9 768
2037		4 489		64	4 553	9 869	535	10 405
2038		4 731		68	4 799	10 506	564	11 070
2039		4 988		71	5 059	11 169	595	11 764
2040		5 260		75	5 335	11 861	627	12 489
2041		5 546		79	5 625	12 584	662	13 245
2042		5 854		84	5 938	13 339	698	14 037
2043		6 180		88	6 268	14 126	737	14 863
2044		6 522		93	6 616	14 949	778	15 727
2045		6 884		98	6 982	15 809	821	16 630
2046		7 256		104	7 359	16 708	866	17 573
2047		7 645		109	7 754	17 646	912	18 558
2048		8 049		115	8 164	18 623	960	19 583
2049		8 471		121	8 591	19 643	1 010	20 653
2050		8 906		127	9 033	20 706	1 062	21 769

Table A6.8 PAYG cost ratio (Reform options)

Year	A+B (%)	Employment Injury Benefits (%)			Invalidity and Survivors' Benefits (%)		
		Benefit	Administration	Total (A)	Benefit	Administration	Total (B)
2010	2.16	0.74	0.15	0.88	1.16	0.12	1.28
2011	2.21	0.74	0.15	0.89	1.20	0.12	1.32
2012	2.36	0.78	0.15	0.93	1.31	0.12	1.43
2013	2.38	0.73	0.15	0.87	1.39	0.12	1.51
2014	2.47	0.74	0.15	0.89	1.46	0.12	1.58
2015	2.56	0.76	0.15	0.91	1.53	0.12	1.65

Year	A+B	Employment Injury Benefits (%)			Invalidity and Survivors' Benefits (%)		
	(%)	Benefit	Administration	Total (A)	Benefit	Administration	Total (B)
2016	2.62	0.77	0.15	0.92	1.59	0.12	1.70
2017	2.70	0.79	0.15	0.94	1.64	0.12	1.76
2018	2.76	0.81	0.15	0.96	1.68	0.12	1.80
2019	2.81	0.82	0.15	0.97	1.72	0.12	1.84
2020	2.86	0.83	0.15	0.98	1.76	0.12	1.88
2021	2.90	0.84	0.15	0.99	1.79	0.12	1.91
2022	2.94	0.85	0.15	1.00	1.82	0.12	1.94
2023	2.98	0.86	0.15	1.01	1.85	0.12	1.97
2024	3.01	0.87	0.15	1.02	1.87	0.12	1.99
2025	3.05	0.88	0.15	1.03	1.90	0.12	2.02
2026	3.07	0.89	0.15	1.03	1.93	0.12	2.04
2027	3.11	0.89	0.15	1.04	1.95	0.12	2.07
2028	3.14	0.90	0.15	1.05	1.97	0.12	2.09
2029	3.18	0.91	0.15	1.06	2.00	0.12	2.12
2030	3.20	0.91	0.15	1.06	2.02	0.12	2.14
2031	3.23	0.92	0.15	1.07	2.04	0.12	2.16
2032	3.26	0.93	0.15	1.07	2.07	0.12	2.19
2033	3.30	0.93	0.15	1.08	2.10	0.12	2.22
2034	3.33	0.93	0.15	1.08	2.13	0.12	2.25
2035	3.35	0.94	0.15	1.08	2.15	0.12	2.27
2036	3.39	0.94	0.15	1.09	2.18	0.12	2.30
2037	3.41	0.94	0.15	1.09	2.20	0.12	2.32
2038	3.43	0.94	0.15	1.09	2.22	0.12	2.34
2039	3.45	0.94	0.15	1.09	2.24	0.12	2.36
2040	3.45	0.94	0.15	1.08	2.26	0.12	2.37
2041	3.47	0.93	0.15	1.08	2.27	0.12	2.39
2042	3.48	0.93	0.15	1.08	2.28	0.12	2.40
2043	3.48	0.92	0.15	1.07	2.29	0.12	2.41
2044	3.48	0.92	0.15	1.07	2.29	0.12	2.41
2045	3.48	0.91	0.15	1.06	2.30	0.12	2.42
2046	3.48	0.91	0.15	1.06	2.30	0.12	2.42
2047	3.49	0.91	0.15	1.06	2.31	0.12	2.43
2048	3.48	0.91	0.15	1.05	2.31	0.12	2.43
2049	3.49	0.90	0.15	1.05	2.32	0.12	2.44
2050	3.49	0.90	0.15	1.05	2.32	0.12	2.44

Appendix 7. Assessment of the contribution ceiling increase

The next tables show the impact of the increase in wage ceilings and the introduction of the minimum wages of MYR900 per month. Changes will cause the wage base to be increased and hence temporarily ameliorate the financial situation of the scheme. However, as the increased wage base lead to proportionately higher pensions, the long-term financial impact of these changes will be neutral.

In many developed countries, the wage ceiling is at least twice the average wage or those whose earnings are above the ceiling are less than 10 per cent of the total contributor. From the tables, it is assessed that the new wage ceiling should be at least MYR4,000.

Impact on the average contribution base - increase in wage ceiling and the introduction of minimum wage (MYR900 per month)

Increase in ceilings			
Minimum wage	3 000	4 000	5 000
0	1 438	1 564	1 646
900	1 604	1 730	1 812

Increase from the current provision (No minimum wage, wage ceiling = MYR3,000

Increase in ceilings			
Minimum wage	3 000	4 000	5 000
0	0.0%	8.8%	14.4%
900	11.6%	20.3%	26.0%

EPF wage distribution

Wage bands	Active members	Percentage	Percentage above	Average
- 500	1 162 588	19.5	100.0	250
501 - 600	310 732	5.2	80.5	550
601 - 700	274 946	4.6	75.2	650
701 - 800	293 594	4.9	70.6	750
801 - 900	248 139	4.2	65.7	850
901 - 1 000	290 277	4.9	61.5	950
1 001 - 2 000	1 677 821	28.2	56.7	1 500
2 001 - 3 000	773 605	13.0	28.5	2 500
3 001 - 4 000	342 867	5.8	15.5	3 500
4 001 - 5 000	185 339	3.1	9.7	4 500
5 001 - 6 000	107 854	1.8	6.6	5 500
6 001 - 7 000	68 626	1.2	4.8	6 500
7 001 - 8 000	49 765	0.8	3.6	7 500
8 001 - 9 000	32 127	0.5	2.8	8 500
9 001 - 10 000	28 126	0.5	2.3	9 500
10 001 - 15 000	59 513	1.0	1.8	12 500

Wage bands	Active members	Percentage	Percentage above	Average
15 001 - 20 000	21 453	0.4	0.8	17 500
20 001 - 25 000	9 969	0.2	0.4	22 500
25 001 - 30 000	5 332	0.1	0.3	27 500
30 001 - 35 000	2 884	0.0	0.2	32 500
35 001 - 40 000	1 979	0.0	0.1	37 500
40 001 - 45 000	1 175	0.0	0.1	42 500
45 001 - 50 000	933	0.0	0.1	47 500
50 001 -	2 996	0.1	0.1	50 000
Total	5 952 640	100.0		1 963
			Twice average	3 927

EPF wage distribution : minimum wage MYR900

Wage bands	Active members	Percentage	Percentage above	Average
900 -	2 289 999	38.5	100.0	900
901 - 1 000	290 277	4.9	61.5	950
1 001 - 2 000	1 677 821	28.2	56.7	1 500
2 001 - 3 000	773 605	13.0	28.5	2 500
3 001 - 4 000	342 867	5.8	15.5	3 500
4 001 - 5 000	185 339	3.1	9.7	4 500
5 001 - 6 000	107 854	1.8	6.6	5 500
6 001 - 7 000	68 626	1.2	4.8	6 500
7 001 - 8 000	49 765	0.8	3.6	7 500
8 001 - 9 000	32 127	0.5	2.8	8 500
9 001 - 10 000	28 126	0.5	2.3	9 500
10 001 - 15 000	59 513	1.0	1.8	12 500
15 001 - 20 000	21 453	0.4	0.8	17 500
20 001 - 25 000	9 969	0.2	0.4	22 500
25 001 - 30 000	5 332	0.1	0.3	27 500
30 001 - 35 000	2 884	0.0	0.2	32 500
35 001 - 40 000	1 979	0.0	0.1	37 500
40 001 - 45 000	1 175	0.0	0.1	42 500
45 001 - 50 000	933	0.0	0.1	47 500
50 001 -	2 996	0.1	0.1	50 000
Total	5 952 640	100.0		2 130
			Twice	4 259

Following a request from the Social Security Organisation (SOCSO) of Malaysia, a Funds-in-Trust agreement was negotiated between the International Labour Organization and SOCSO for the provision of the actuarial services for carrying out the ninth actuarial valuation of the Social Security Fund, as of 31 December 2010.

This report presents the results of the ninth statutory actuarial valuation of the employees' Social Security Fund (SOCSO), as of 31 December 2010. It follows the format of the eighth report with the extended consideration of the global economic turmoil which originated from the financial crisis in the United States and the European Union.

The Employment Injury Benefits Branch and the Invalidity (and Survivors') Benefits branch have been valued independently. More detailed explanations on the generic projection model for the ninth actuarial valuation are attached in the appendices.

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