

Malaysia

Report to the Government Social Security Organization: the first actuarial valuation of the Self-Employed Social Security Scheme as of 31 December 2019

Regional Actuarial Services Unit (RAS), DWT for East and South-East Asia and the Pacific, Bangkok ILO Global Employment Injury Programme (ILO/GEIP), Enterprises Department, Geneva



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Article 57 of the Self-Employment 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.

This actuarial review does not include the funds administered by SOCSO related to the Employees' Social Security Scheme (ESSS) (Act 4) and the Employment Insurance System Act 2017 (Act 800) which is subject to a separate report.

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 the SOCSO for the provision of the actuarial services for carrying out the first actuarial valuation of the Self-Employed Social Security Scheme ('SESSS') as of 31 December 2019.

Statistical data and information for this valuation have been obtained via electronic transfers between the SOCSO staff and the actuaries. Subsequently, the model of the Enterprises/Global Employment Injury Programme (ENT/GEIP) of the ILO was used to prepare the demographic and financial projections associated with the actuarial review.

The report has been structured as follows:

- Section 1 presents a review of the experience of the implementation of the scheme on 1 July 2017 to 31 December 2019.
- Section 2 describes the projection of the general population and the macroeconomic framework used for the valuation.
- Section 3 presents the projections of the Self-Employment Scheme.

- 2
- ▶ Section 4 presents sensitivity analysis scenarios of the projections of the Self-Employment Scheme.
- ▶ Section 5 presents comments and calculations related to various issues raised by SOCSO as part of the terms of reference signed with the ILO.
- ▶ The appendices contain a summary of key SOCSO contribution and benefit provisions, a description of the methodology used for the valuation, key data inputs and assumptions.

Acknowledgements

The Social Security Organization (SOCSO) of Malaysia requested the International Labour Organization (ILO) to carry out the first actuarial valuation of the Self-Employed Social Security Scheme (SESSS) as of 31 December 2019 in a framework of a Funds-in-Trust agreement between the ILO and SOCSO for the provision of actuarial, investment and training services.

The work was managed by Mr Simon Brimblecombe, Chief Technical Advisor and Head of the Regional Actuarial Services Unit (RAS), Decent Work Team for East and South-East Asia and the Pacific, ILO Bangkok with technical input and review from Mr Hiroshi Yamabana of the ILO Global Employment Injury Programme (ILO/GEIP). Legal input was provided by Ms Anne Marie La Rosa of the ILO Global Employment Injury Programme (ILO/GEIP).

The ILO appointed Mr Raphaël Imbeault, FSA, FCIA and Mr Gilles Binet, FSA, FCIA who undertook the actuarial work with a review from Mr Simon Brimblecombe and Mr Hiroshi Yamabana.

The Regional Director of the ILO Regional Office for Asia and the Pacific thanks Dato' Sri Dr Mohammed Azman Aziz Mohammed, SOCSO Chief Executive for his confidence and the courtesy and cooperation extended to the ILO. The ILO project team worked in close collaboration with Ms Shuhada Nor Baharin, Actuarial Officer, Actuarial Unit and her team members and expresses its since gratitude to them.

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Abbreviations and acronyms

CPI Consumer Price Index

DoS Department of Statistics

EI Employment Injury

ESSS Employees' Social Security scheme

GAP General Average Premium

GDP Gross Domestic Product

ILO International Labour Office

IS Invalidity and Survivors

ISSA International Social Security Association

MIE Maximum Insurable Earnings

PAYG Pay-as-you-go

PD Permanent disability

SESSS Self-Employed Social Security scheme

SOCSO Social Security Organization

TFR Total fertility rate

TD Temporary disability

UN United Nations



This report presents the results of the first actuarial valuation of the Self-Employed Social Security Scheme (SESSS) as at 31 December 2019. This scheme is comprised of an Employment Injury Benefits Branch (EI) only. A description of the scheme's benefits, a summary of the methodology of the actuarial valuation and a set of scheme-specific data and assumptions used in this report are included in the appendices.

Valuation of SESSS

The overall financial situation of SESSS was sound on the valuation date. The cost of the scheme is covered within the current contribution rate of 1.25 per cent.

The projections are performed mostly using assumptions adopted for the 11th Actuarial Review of the Employees' Social Security Scheme (ESSS). This is due to the fact that SESSS is a new scheme and that its short experience cannot be considered statistically credible. This situation brings uncertainty related to the projection performed and caution should be exercised when looking at the experience and the projections of SESSS.

While the experience of the scheme was favourable, there is no pension in payment as of the valuation date. There may be a delay with dealing with claims, but stakeholders should bear in mind that such experience will emerge in the future. Appropriate adjustments to the assumptions used in the projections will be adopted by the actuaries who will perform the next actuarial valuation, due at the latest on 31 December 2024.

Sensitivity to SESSS projections

Based on the elements discussed in the valuation of SESSS, further sensitivity analyses were performed on the results of the actuarial projections. It shows that if incidence and severity of claims were 25 percent higher than in the base scenario, the current contribution rate of SESSS would not be sufficient to meet its obligations (benefits and administrative expenses).

Other considerations for SESSS

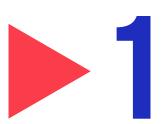
As part of the project document signed between SOCSO and the ILO, there are various elements of SESSS that the ILO were asked to comment on during the actuarial valuation.

The first element relates to the application of industry-rating for SESSS. The mathematical adjustment would be the same as per the calculations performed for ESSS in the 11th Actuarial Valuation. However, we recommend that stakeholders should not yet undertake this for SESSS. The scheme is young, with no statistically credible experience on which to establish a basis for industry-rating. Rating by industry in a voluntary scheme may be advisable as the workers will feel that they pay a fair price given the risk they represent. Otherwise, the success of increasing coverage is vulnerable to workers' perception of the cost/benefit relationship for their protection, which may lead to undesirable results in terms of extent of coverage and cost of the scheme. This is explained in more detail in the relevant section.

Another element that was analysed by the technical team is the extension of coverage in SESSS to include an Invalidity Branch (IS) that would be equivalent to the one offered under ESSS coverage. While extension of coverage is a goal that the ILO shares, there are fundamental issues that need to be addressed before doing so. The IS branch of ESSS is in a very difficult financial situation, where a substantial and rapid rate increase and/ or benefit reduction is required in order to ensure the viability of the branch. The EI branch of both SESSS and ESSS were established using the same contribution rate. Stakeholders could expect the same for the extension of coverage, which would immediately lead to an unsustainable extension of coverage for SESSS. National dialogue on the future of the IS branch of ESSS should be completed before consideration of the extension of benefit coverage in SESSS.

Issues related to the merger of SESSS and ESSS funds are also addressed in this technical note. This proposed merger is against best governance practices and principles of social security schemes and systems. While the administration of different schemes and branches by a single entity is beneficial, each branch of each social security system should be managed and assessed independently. Furthermore, combining branches can lead to an opaque financing situation for each branch, as each one will have their own unique financing mechanisms and characteristic which require their own set of solutions in case of problems.

While the ILO does not support this merger of scheme, calculations were performed as requested in the project document. The merged fund does not show an improved financial situation compared to the ESSS projections, since the nominal value of SESSS is marginal compared to the value of ESSS and therefore has little financial impact.



Review of the experience of the scheme

The experience of the scheme for the period preceding the valuation date is limited as it has only been two and a half years since its inception on 1 July 2017 (and later expanded to other groups). For a social security scheme, this period is too short to identify meaningful long-term trends, especially when coverage is voluntary.

1.1 Experience from 1 July 2017 to 31 December 2019

Income and expenditure

Table 1.1 summarizes the income and expenditure accounts of the scheme and the cumulative reserve.

► Table 1.1 Summary of SESS scheme income and expenditure (MYR 000)

		2017	2018	2019
Income	Contributions	160	887	5,693
	Investment income ¹	1,39	1,399	2,272
	Other income ²	60,000	0	0
	Total income	61,555	2,287	7,965
Expenditure	Benefit expenditure ³	71	212	535
	Administration	2,654	4,374	3,750
	Total expenditure	2,725	4,586	4,284
Surplus for the Year		58,830	-2,299	3,681
Reserve on 31 December ⁴		58,830	56,190	60,212

Notes: 1 Refers to gross investment income reduced by impairment losses for financial assets reported in expenses million MYR. 2 Government grant. 3 Includes benefits and benefits related expenses. 4 In 2018 and 2019, the cumulative reserve is not equal to the sum of that of the previous year and of the surplus for the year due to changes in accounting practices not considered in this table.

The data suggest the following:

- ▶ Contributions increase significantly from 2018 to 2019. According to statistical data, the number of active contributors was 2,339, 7,660 and 71,425 respectively as at 31 December of 2017 2018, and 2019 respectively.
- Thanks to a start-up grant from the government, the fund benefits from attractive levels of investment income in the first 3 years in terms of percentage of contributions this amounts to around 75 percent.
- Benefit expenditures are growing slowly, which should not be interpreted as favourable experience, because there is a delay between the coverage of workers and the emergence of benefits expenditures. These data do not reflect the capitalized value of pensions for workers who have become permanently disabled or for the survivors of those who died, but only the monthly pension cash flow amounts in the relevant financial years. More details are presented below.
- ▶ The administration costs represent 160 percent of the contributions for the 2.5-year period which is a normal reflection of administrative burden during a period of implementation. This ratio can be expected to gradually evolve towards that observed for the other plans administered by SOCSO.
- ► The Reserve of MYR 60.2 million on 31 December 2019 represents 0.2 percent of total SOCSO reserves (MYR 30,343 million), which shows the modest size of this scheme in its early stages.

Frequency

Table 1.2 shows for the years 2017, 2018 and 2019 the number of contributors and cases of the principal benefit types. The number of cases is low because of the small number of members (and exposure to risks) and normal delays in claims administration. It is therefore too early to draw conclusions from the experience of the self-employed compared to that of employees.

► Table 1.2 Temporary disablement benefit, permanent disablement benefit and dependant's benefit experience, 2017-19 (Contributor numbers at 31.12. of each year)

	2017	2018	2019
Contributors	2,339	7,660	71,425
Reported accidents		51	161
Temporary disablement benefit			
number of paid cases	6	36	102
number of corresponding days	104	1,351	2,727
Permanent disablement benefit			
number of lump sum awards		9	18
Dependants' benefit			
number of awards		3	7
Funeral Grant			
▶ number of cases¹		3	3

Notes: 1 The number of funeral grants in 2019 is smaller than the number of dependants' benefit awards due to delays in data reporting system.

Notes: 1 The number of funeral grants in 2019 is smaller than the number of dependants' benefit awards due to delays in data reporting system.

The split of reported accidents between industrial and commuting has changed materially between 2018 and 2019. It is not clear to what extent this phenomenon is related to what has actually happened or changes in administrative practices in accident recording.

No permanent disability pension had yet been awarded at the end of 2019. As there is usually a delay between the occurrence of injuries and the awards of those benefits, it should not be concluded that no accident with a severely impaired worker has happened in the first 2.5-year period of the scheme.

Benefits expenditure, 2017-19 (MYR 000)

The benefits expenditure by item is presented is presented in Table 1.3.

► Table 1.3 Benefits expenditure by item, 2017-19 (MYR 000)

	2017	2018	2019
Temporary Disablement (TDB)	6	92	185
Permanent Disablement (PDB)	-	43	180
Dependents' benefit	-	32	106
Constant attendance allowance	-	-	-
Medical benefit	-	4	7
Physical or Vocational Rehabilitation	-		18
Funeral benefit	-	6	11
Other	65	35	28
Total	71	212	535

Table 1.3 reveals that no constant attendance allowance had been paid up to 31 December 2019, which is consistent with the fact that no permanent disability pension was being paid at that date.

The amounts shown in table 1.3 represent the current expenditure on the various amounts items which find their corresponding total set out in Table 1.1.

An analysis of benefits that is consistent with the financial system and approach is more relevant for valuation purposes. This analysis expresses the relevant expenditure which should be covered by the contributions for each year and for each benefit item, expressed as a percentage of the corresponding insured earnings (the relative cost). For short-term benefits, the relevant expenditure corresponds to the current expenditure, as reported in table 1.3 (Pay as You Go approach). For long-term benefits it corresponds to the capitalized present value of new benefit awards in that year (Terminal Funding approach).

Thus, as far as short-term benefits are concerned, the data for this analysis is taken as the benefit expenditures shown in the published income and expenditure accounts seen in table 1.3. As regards long-term benefits such as permanent disablement and dependants' benefits, the relevant expenditure, which is the capitalized value of new awards, is not published in the Annual Report but recorded internally by SOCSO.

In fact, this approach does not say much more about long-term trends because of the low maturity of the plan and delays in the management of claims and difficulties in securing data. Table 1.4 presents the data for 2018 and 2019. It is not relevant to present the data for 2017 given the short period and very low coverage.

► Table 1.4 Retrospective cost analysis, 2018-19, (amounts in MYR 000 and expressed as a percentage of the insured earnings)

	20	2018		2019	
	Amount	%	Amount	%	
Temporary Disablement (TDB)	92	0.13	185	0.04	
Permanent Disablement (PDB)	43	0.06	180	0.04	
Dependants' benefit	712	1.00	271	0.06	
Constant attendance allowance	0	0.00	0	0.00	
Medical benefit	4	0.01	7	0.00	
Physical or Vocational Rehabilitation	0	0.00	18	0.00	
Funeral benefit	6	0.01	11	0.00	
Other expenses	35	0.05	28	0.01	
Total benefits	892	1.26	700	0.15	
Estimated insured earnings	70,991		455,423		

There is only one element that differentiates Table 1.4 from Table 1.3, namely dependants' benefits for which the present value of awarded pensions is presented instead of the annual payment. If permanent disability pensions had started to be paid, the results for this item and possibly for the CAA would have been different as well.

The data in this table confirms that one really cannot give much importance to the experience of the plan during its first two full years because of the instability of the results due to the small volume of data and administrative practices still to be stabilised. For comparison, it is interesting to note that the cost as a percentage of the insured salary bill for the salaried workers scheme (Act 4) was 0.69 for each of the two years 2018 and 2019.

1.3 Summary and conclusion

Analysis of experience indicates that the coverage of the self-employed was gradual during the first years of the scheme's existence. Due to the limited scheme experience, the volume of data on the incidence and severity of accidents is too small to serve as a reliable basis for projections. In addition, this data only concerns a well-targeted economic sector and even if they were statistically credible, they could still not serve as a reliable basis for projections since as of 2020, self-employed workers in all sectors can now be covered. The next section presents the approach adopted to reflect this specific context which in itself means a certain level of uncertainty in scheme development.

Despite the limitations of the data available, the first indications of the number of accidents are that the fears often associated with what is called adverse selection when coverage is optional have not turned into observable reality. Nevertheless, it is still too early to conclude that this risk is under control.

2

Projected demographic and macroeconomic environment of Malaysia

The future income and expenditure of the SOCSO scheme will be closely linked to changes in the size and age structure of the population of the country, employment levels, economic and wage growth, inflation, and rates of return on investments. Therefore, in order to estimate future SOCSO finances, a projection of Malaysia's total population and economic activity is required. Demographic projections provide estimates of the size and composition of the labour force, while projections of the gross domestic product (GDP) and the growth of labour productivity are necessary to project the number of workers and their earnings. Population and economic projections are interrelated. They are thus performed together to ensure consistency of results.

Demographic and macroeconomic variables were projected for a period of 50 years, following an analysis of past trends and an estimate of plausible future experience. Population and economic projections are an intermediary step to derive SOCSO's scheme projections. The assumptions used are either the same as those used for the 11th Actuarial Valuation of the ESSS or consistent with these.

2.1 Population projection

The determinants of future population changes are fertility, mortality, and net migration. Fertility rates determine the number of births, while mortality rates determine how many, and at what ages people are expected to die. Net migration represents the difference between the number of people who permanently enter and leave Malaysia.

For this valuation, the estimate of the population of the reference year of this valuation (2019) is 32,522,800. It was extracted from the World Population Prospects 2019 (WPP) published by the United Nations in 2019¹. This publication is the main source of the assumptions used for the projection of the population.

Fertility

The total fertility rate (TFR) represents the average number of children each woman of childbearing age would have if she had all her children in a particular year. If there is no migration, a TFR of about 2.1 is required for each generation to replace itself. The TFR in Malaysia has declined steadily from 2.93 in 2000 to 2.19 child per woman in 2012 and has been under the replacement level since 2013. Table 2.1 shows the assumptions used for this actuarial valuation. The retained assumption is to use the TFR in 2019 as mentioned by the Department of Statistics (DoS) (1.78) and to linearly amortize it until 2050, where the assumption is to use WPP projections for TFR.

► Table 2.1 Total fertility rate assumption

Year	Total fertility rate
2019-24	1.77
2025-29	1.76
2030-34	1.75
2035-39	1.74
2040-44	1.72
2045-49	1.71
2050-54	1.70
2055-59	1.70
2060-64	1.69
2064-69	1.69

Source: Dos, WPP 2019 and authors' calculation

¹ United Nations, Department of Economic and Social Affairs, Population Division (2019). World Population Prospects 2019, Online Edition. Rev. 1.

Mortality

According to the DoS, life expectancy at birth is estimated at 72.4 years for males and 77.4 years for females in 2019. For this valuation, statistics of DoS are used as a starting point, and mortality converges back in 2030 to improvements in life expectancy and mortality that are assumed to occur in accordance with UN estimates. Under this pattern of mortality improvements, it is projected that life expectancy at birth will reach 82.0 years for males and 84.4 years for females in 2069.

Migration

For this valuation, net migration is assumed to occur in accordance with WPP 2019. The annual net migration amount fluctuates between 48,800 and 50,000 in the period 2020-2050 and is set constant at 48,800 thereafter. According to the model, the number of immigrants is double the number of those emigrating each year and both groups are evenly distributed by sex while the distribution by age is different for each group and by sex at adult ages only.

Projected population

Chart 2.1 presents the projected population of Malaysia from 2019 to 2069 separated into three age categories: children (0-14), persons who can potentially be insured under the ESSS scheme (15-59) and persons at pensionable age (60 and over). The evolution of the relative size of each age-group (notably the slight decrease of the population of children and the increase of the number of persons at pensionable age) illustrates the projected ageing of the population of Malaysia.



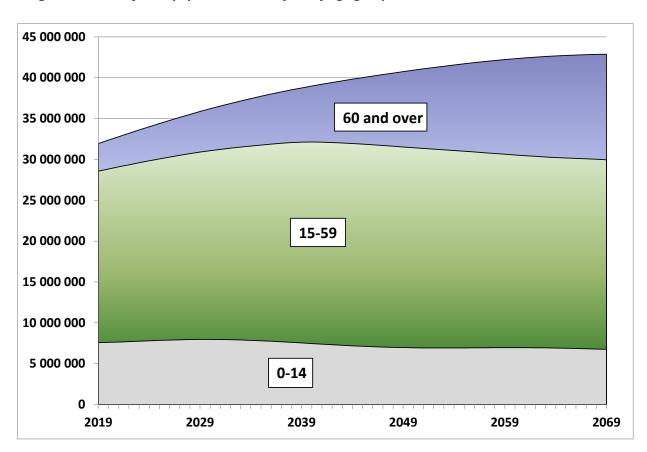


Table 2.2 presents detailed population projections. We can observe that the total population will increase steadily from 32,522,800 in 2019 to 43,268,767 in 2069. The number of persons aged 15 to 59 will increase from 21,509,000 in 2019 to 25,228,729 in 2049 and then decrease to 23,057,221 in 2069.

► Table 2.2 Projected population of Malaysia (2019-2069)

Year	Total	Age		
		0-14	15-59	60 & over
2019	32,522,800	7,652,300	21,509,000	3,361,500
2029	36,198,369	7,731,174	23,571,538	4,895,656
2039	39,187,066	7,554,367	25,146,860	6,485,839
2049	41,210,788	6,990,163	25,228,729	8,991,896
2059	42,605,437	6,835,863	23,777,370	11,992,203
2069	43,268,767	6,723,918	23,057,221	13,487,628

2.2 Macroeconomic framework

Economic growth

This actuarial valuation is being carried out in an unprecedented context due to the COVID-19 pandemic. For this reason, establishing assumptions is subject to more uncertainty than in normal circumstances. Even though there seems to be a consensus that the economy will return to some normality after a period of transition, it can nevertheless be expected that the context will be different from what it would have been in the absence of the pandemic. For example, significant progress has been made in the digitalization of the economy which will have an impact on the labour market. The purpose of this actuarial valuation is to highlight long-term trends in the finances of the SOCSO fund rather than seeking to accurately predict the period of return to normality. It is the long-term view over the projection period which is important, and its usefulness should not be compromised by discrepancies between assumptions and observances, which could arise in the first few years of projection.

Figure 2.2 shows that the GDP increased steadily over the 15 years ending in 2019 except in 2009 due to the financial crisis. The average growth during these 15 years has been 4.9 percent per annum. The country recovered rapidly from the Global Financial Crisis in 2009, recording growth rates averaging 5.3 percent since 2010. In 2019, before the start of the pandemic, growth of real GDP was expected at around 4.7 percent for the decade ending in 2030².

² Ministry of Economic Affairs Malaysia, Shared Economic Vision 2030, 2019.



► Figure 2.2 Real GDP growth of Malaysia (2005-2019)

Source: Department of Statistics of Malaysia.

The assumptions used are as follows. In the short term, we have relied on the outlook of the Ministry of Finance³, which reports a decline in gdp of 4.5 percent in 2020 followed by a rebound of 6.9 percent in 2021. For 2022 to 2025, the IMF's estimates, i.e. a growth rate decreasing from 6 percent to 5 percent have been used. For the following 5 years, the assumption is a linear decrease from 5 percent to 3.5 percent in 2030. From 2031 to 2035, gdp growth is assumed constant at 3.5 percent and thereafter the change depends on that of productivity per worker and the employed population.

The long-term assumption on GDP is the result of assumptions on the future evolution of the labour force, the wage share of GDP and labour productivity (discussed below).

Productivity

The assumptions on the growth of GDP and the employed population lead to a decrease in productivity per worker in 2020 followed by a resumption of growth. For the first 5 years of projection, i.e. for the period 2020-2024, productivity grows by an average of 2.4 percent per year. From 2025, the productivity growth of 3.5 percent gradually decreases to 2.6 percent in 2035 and decreases linearly to 2.5 percent in 2069.

The growth of compensation to employees as a proportion of GDP is a key indicator by the government to measure the development of the country. In the 2015-2020 plan, the objective was to increase this from 34.9 percent in 2015 to at least 40 percent in 2020. Progress has been slower than expected and the objective will not be achieved. In the revision of the 2015-2020 plan, the government set its new target for 2020 at 38 percent while recalling that the target must be greater than 40 percent in the medium term to reach that of high-income countries. For the purposes of this actuarial valuation, the assumption used is that the objective of 40 percent will be reached in 2035 and that it will increases at a reduced pace to reach 42.1 percent in 2069.

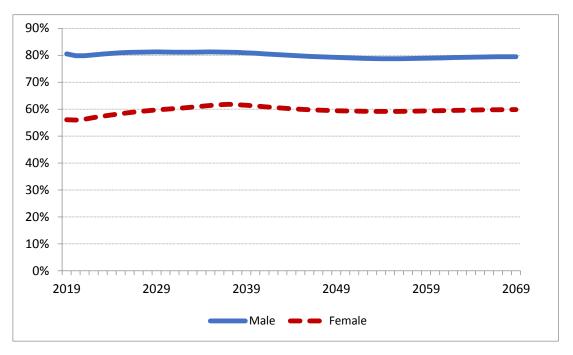
▶ Table 2.3 Projected GDP growth, productivity, and total employment

Year	Real GDP growth (%)	Increase in productivity per worker (%)	Increase in the number of workers (%)	Labour income share in GDP (%)
2020	-4.5	-4.1	-0.4	35.9
2021	6.9	4.6	2.2	35.9
2022	6.0	4.1	1.8	35.9
2023	5.7	4.0	1.7	36.2
2024	5.3	3.7	1.6	36.5
2029	3.8	2.6	1.1	38.1
2039	3.0	2.6	0.4	40.5
2049	2.4	2.6	-0.2	41.1
2059	2.0	2.5	-0.5	41.6
2069	2.2	2.5	-0.3	42.1

Labour force

It is assumed that the total participation rates for males will stay constant at their level of 2019 for the entire projection period while it is assumed that the total participation rate of females will increase from 55.6 percent in 2019 to 60.0 percent in 2035 in accordance with the objectives of the government. Age-specific participation rates remain constant from 2037. Fluctuations in the total participation rates are due to changes in the age composition of the population.

▶ Figure 2.3 Projected total participation rate, by sex (2019-2069)



Unemployment rates have been relatively stable during the period 2015-2019 with an average of 3.1 percent for males and 3.6 percent for females. Young people from the age of 15 to 25 years account for about two thirds of the unemployed.

For 2020 and 2021, the unemployment rates are those forecast by the Ministry of Finance. The forecast for 2020 is 4.3 for both genders. The 2021 rates, respectively 3.0 percent for males and 4.4 percent for females, assume a return normal after the pandemic year. The age-specific rates of 2021 have been used for the remainder of the projection period. Fluctuations in the total unemployment rates are due to changes in the age composition of the population.

The distribution of the employed population between salaried workers, self-employed and unpaid family workers of 2019 by sex and age has been assumed to remain constant over the projection period.

► Table 2.4 Labour market balance (2019-2069)

(in thousands)	2019	2029	2039	2049	2059	2069
Total population	32,523	36,198	39,187	41,211	42,605	43,269
Male	16,765	18,527	19,951	20,892	21,527	21,819
Female	15,758	17,672	19,236	20,319	21,078	21,450
Population 15-64	22,680	25,062	26,913	27,831	26,781	25,548
Male	11,759	12,929	13,853	14,251	13,618	12,954
Female	10,922	12,133	13,060	13,580	13,163	12,593
Labour force 15-64	15,582	17,744	19,224	19,351	18,549	17,824
Male	9,462	10,502	11,205	11,284	10,742	10,294
Female	6,119	7,242	8,019	8,067	7,808	7,530
Participation rate	69%	71%	71%	70%	69%	70%
Male	80.5%	81.2%	80.9%	79.2%	78.9%	79.5%
Female	56.0%	59.7%	61.4%	59.4%	59.3%	59.8%
Employed (15-64)	15,073	17,199	18,675	18,804	18,027	17,327
Male	9,202	10,234	10,939	11,020	10,492	10,055
Female	5,871	6,965	7,736	7,783	7,535	7,271
Salaried (15-64)	11,180	12,596	13,368	13,224	12,688	12,238
Male	6,835	7,488	7,805	7,722	7,355	7,078
Female	4,345	5,108	5,563	5,502	5,333	5,159
Self-Employed (15-64)	3,316	3,961	4,582	4,819	4,609	4,391
Male	2,160	2,554	2,946	3,109	2,956	2,805
Female	1,155	1,407	1,636	1,711	1,653	1,586

Unemployed	508	546	549	547	523	497
Male	260	268	266	264	250	239
Female	248	277	282	284	273	258
Unemployment rate	3.3%	3.1%	2.9%	2.8%	2.8%	2.8%
Unemployment rate Male	3.3% 2.7%	3.1% 2.6%	2.9% 2.4%	2.8% 2.3%	2.8% 2.3%	2.8% 2.3%

Inflation

Historically, inflation has been under control with an average annual rate of 2.4 percent since 1995. The annual average rate of inflation (ratio of the average CPI for the 12 months of a calendar year to the average CPI of the 12 months of the preceding year) was 1.9 percent over the last 5 years.

► Table 2.5 Historical inflation rates in Malaysia (1995-2019)

Period	Inflation rate (%)
1995-99	3.5
2000-04	1.5
2005-09	2.9
2010-14	2.4
2015-19	1.9
1995-2019	2.4

Source: Department of Statistics of Malaysia

For the first two years of projections, the forecasts of the Ministry of Finance concerning the variation of the CPI were adopted. Due to the pandemic, deflation is observed in 2020 (-1.0 percent) while a return to normal conditions is expected in 2021. For the years 2022 to 2025, the IMF forecasts were used. Beginning in 2026, we assumed that the projected inflation rate of 2.0 percent in 2025 would increase to 2.5 percent in 2030 where it is assumed constant thereafter.

Wage increases

The real wage increase is assumed to gradually converge towards the productivity per worker, as it is expected that wages will adjust to efficiency levels over time. After a downturn in 2020 where the estimate is a decrease of the nominal salary of 4.4 percent, the increase of the nominal average salary is linked to the evolution of the share of compensation of employees. Therefore, the assumed nominal wage increases will be in the 6.0-7.0 percent range until 2035 and will decrease gradually to slightly above 5 percent in 2045 and thereafter.

Rate of return of the SOCSO fund

As previously indicated, for social security programs such as the SOCSO programs, under which most of the benefits (and related actuarial liabilities) are fully sensitive to price inflation, the return parameter which is most pertinent for actuarial projection purposes is the real rate of return, i.e. the rate of return in excess of price inflation. This valuation assumes a real rate of return assumption of 2.5 percent per annum (the same as was adopted for the ESSS actuarial valuation).

The methodology traditionally used in the actuarial profession for setting appropriate return assumption is referred to as the "building block" method. Under such a method, a long term expected rate of return is set for each asset category and the overall return assumption to be used for actuarial purposes is determined as the weighted average of these expected long-term rates of return, the weight given to each asset category corresponding to the long-term allocation to such asset category under the investment policy adopted for the program. The long term expected rate of return for each asset category is determined by adding to the price inflation assumption, the real rate of return expected for no-risk investment instruments (i.e. short-term government issues) and for other asset categories, the expected "risk premia" inherent to any such asset category, i.e. remuneration expected by the market investors as a compensation for the various risks inherent to the asset category.

Table 2.6 presents the calculation of the estimated nominal and real rate of return based on the asset allocation of the ESSS as at 31 December 2019.

► Table 2.6 Asset allocation and projected long-term return (percentages)

Asset category	ESSS Allocation at 31 December 2019	Expected nominal rate of return	Resulting real rate of return (with 2½ % price inflation assumption)			
Government securities – Conventional & Islamic	50	4.14	1.60			
Corporate debt securities – Conventional & Islamic	14	4.38	1.83			
Equities	18	7.14	4.53			
Money market instruments	15	3.52	1.00			
Real estate ¹	3	5.04	2.48			
Weighted average of expected real rate of r	Veighted average of expected real rate of return based on current asset mix					
Provisional assumption used for current act	al assumption used for current actuarial valuation					

Notes: 1 The expected nominal rate of return for this asset category was set the average of those of Corporate securities and Foreign equities. AR 2015 did not provide explicit information for that category of assets.

The assumption setting process described above assumes that the current asset mix strategy for ESSS is also adopted for the SESSS. This could be considered as conservative, being largely oriented towards fixed income securities, including short term deposits.

If the asset allocation to equities increases as recommended for the ESSS, and we understand such a change is currently or will be part of the investment strategy, a real rate of return assumption of 2.5 percent per annum, can be considered appropriate for the present valuation.

The impact of a favourable scenario of investment return on the main results of this valuation is quantified and presented in section 4 (sensitivity test on discount rate). However, giving the scheme is relatively new, the rate of return assumption does not make a key impact on results at present.

For this actuarial valuation, the long-term real rate of return is therefore assumed to be equal to 2.5 percent except for the first 10 projection years where shorter-term forecasts have been considered. For this period, it was assumed that the nominal rate of return observed in 2019 of 4.5 percent would evolve linearly towards the long-term rate of 5.1 percent. Omitting the year 2020, which is atypical, this approach produces an average real rate of return for the 2021-29 transition period of 2.6 percent, which is a little above the long-term average return assumption of 2.5 per cent. The average expected inflation rate during this period is 2.2 percent while the nominal rate of return is 4.8%.

Table 2.7 presents the evolution of inflation, average wage growth and nominal rate of return that are assumed over the projection period.

▶ Table 2.7 Projected inflation rate, wage increase and rate of return of the Fund

Yea	ar	Inflation rate (%)	Annual nominal increase of average wage (%)	Rate of return of the Fund (%)
2020		-1.0	-4.4	4.5
2021		2.5	6.6	4.6
2022		1.9	6.0	4.6
2023		1.9	6.9	4.7
2024		2.0	6.9	4.7
2029		2.4	6.0	5.1
2039		2.5	5.4	5.1
2049		2.5	5.3	5.1
2059		2.5	5.2	5.1
2069		2.5	5.2	5.1



Valuation of SESSS benefits

3.1 Introduction: purpose of the valuation

One of the purposes of the valuation is to analyse the scheme experience since the inception of SESSS' scheme. This analysis is conducted with due reference to the financial approach applied to the individual benefits. The analysis should lead to an assessment of whether and to what extent the benefits have been provided within the available means of the scheme, i.e. the contribution rate of 1.25 percent of insurable salaries. It should also assess the amount of the technical reserve required on the valuation date for future payments of existing benefits and compare it to the amount of the reserve held by the scheme. It also serves as a basis for establishing assumptions for demographic and financial assumptions.

Demographic and financial projections are provided for a period of 50 years.

3.2 The financial systems for employment injury benefits

Financial system or approach means the arrangement according to which resources are raised to meet expenditures on benefits and administration. It varies according to the type of benefit, i.e. (a) short-term benefits and (b) long-term benefits.

Short-term benefits

The short-term benefits of SESSS include medical and rehabilitation benefits, temporary disablement benefits and funeral benefits. The annual expenditure on these benefits in relation to the total insured earnings is expected to stabilize within a relatively short time after the scheme starts operating. The annual Pay-As-You-Go (PAYG) approach (or the annual assessment system) is the financial system applied to these benefits. Under the PAYG system, the contribution rate is set so that the expected contribution income in a given year equals the expected

benefit expenditure in that same year plus a small margin to build up a contingency reserve. The purpose of this reserve is to meet unexpected variations in receipts and expenditure. Its target level has been set equal to the six-month average of benefit expenditure of the most recent year.

Long-term benefits

The 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 conditions⁴. 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 annual expenditure on these long-term benefits in relation to the total insured earnings 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 earnings 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 that year. In other words, all the new benefits incurred in a year are fully funded during that year. 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 equal to the six-month average of capitalized present value of benefit awards of the most recent year.

Administration costs

Administration costs are covered by adding a loading to the sum of contributions rates t for short-term and long-term benefits.

⁴ Constant attendance allowances (CAA) are normally considered long term benefits however SOCSO accounting practice treats them as short term benefits. This actuarial valuation applies SOCSO accounting practice.

3.3 The frequency experience

Table 3.1 shows for the years 2017 to 2019 the number of cases of the principal benefits of SESSS. As previously stated in this report, the short experience of the scheme does not allow to make any conclusive observations related to SESSS experience.

► Table 3.1 Temporary disablement benefit, permanent disablement benefit and dependents' benefit experience, 2017-19

	Numbers			(per 1	Incidence (per 10,000 contributors)		
	2017	2018	2019	2018 ¹	2019 ²		
Reported accidents		51	161	218.0	22.5		
of which, industrial accidents		3	101	12.8	14.1		
of which, commuting accidents		48	60	205.2	8.4		
Temporary disablement benefit (TDB)							
number of terminated cases	6	36	102	153.9	14.3		
corresponding benefit days	104	1,351	2,727	5,776.0	381.8		
average duration (days)	17.3	37.5	26.7				
Permanent disablement benefit							
number of awards		9	18	38.5	2.5		
of which, pension and lump sum							
of which, pension only							
Dependants' benefit							
number of awards		3	7	12.8	1.0		
Funeral Grant							
number of cases		3	3	12.8	0.4		

Note: 1 The average number of contributors has been taken from the 2018 annual report (7,660). 2 The average number of contributors has been taken from the statistical booklet (71.425). Source: SOCSO Annual Reports and Statistical Booklets

3.4 Analysis of the expenditure of SESSS

The expenditure of SESSS, during the period 2017-19, is presented in Table 3.2. Again, the new nature of the scheme combined with its limited lifetime does not allow the drawing of any definitive conclusion on the expected behaviour of the expenditures of the scheme in the future.

It should be noted that amounts shown in Table 3.2 represent the current expenditure of the various items set out in Table 1.2. For valuation purposes, an analysis consistent with the respective financial systems needs to be performed, which is discussed in Section 3.5.

► Table 3.2 SESSS expenditure by item, 2017-19 (MYR thousands)

	2017	2018	2019
Temporary disablement (TDB)	5.7	91.7	185.2
Permanent disablement (PDB)	0.0	43.2	180.1
Dependants' benefit	0.0	32.4	105.6
Constant attendance allowances	0.0	0.0	0.0
Medical benefit	0.3	4.2	6.7
Phys. or voc. rehabilitation	0.0	0.0	18.3
Funeral benefit	0.0	6.0	11.0
Other expenses	65.1	34.8	27.5
Total	71.0	212.2	534.5
Administration	2,653.6	4,373.7	3,749.5
Grand Total	2,724.6	4,585.8	4,284.1

Notes: The respective items include both industrial and commuting accidents. PDB includes lump sums and periodic payments. Other expenses include cost of medical and appellate boards, activities promoting safety and health, penalties written off and general expenditure not elsewhere classified. The individual figures may not add up due to rounding.

Source: SOCSO Detailed Income and Expenditure by Scheme

3.5 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 applicable financial system as a percentage of the corresponding insured earnings (the relative cost). For short-term benefits, the relevant expenditure corresponds to the current expenditure as reported in Table 3.2. For long-term benefits it corresponds to the capitalized present value of new benefit awards in the year.

Thus, as far as short-term benefits are concerned, the data for this analysis is 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. The data obtained on capitalized values are presented in Table 3.3.

► Table 3.3 Capitalized value of new awards, 2017-19 (MYR thousands)

Year	Permanent Disablement benefit			Dependants' benefits
	Pensions	Lump sums	Total	
2017	0.0	0.0	0.0	0.0
2018	0.0	43.2	43.2	712.0
2019	0.0	180.1	180.1	271.2

Source: SOCSO internal data

The results of the relative cost analysis are presented in Table 3.4, which includes the insured earnings estimated from the contribution income.

► Table 3.4 Retrospective cost analysis for SESSS benefits (amount in MYR thousands and expressed as a percentage of the insured earnings)

Year	201	7	201	8	201	9
	Amount	%	Amount	%	Amount	%
Temporary disablement (TDB)	5.7	0.04	91.7	0.13	185.2	0.04
Permanent disablement (PDB)	0.0	0.00	43.2	0.06	180.1	0.04
Dependents' benefit	0.0	0.00	712.0	1.00	271.2	0.06
Constant attendance allowances	0.0	0.00	0.0	0.00	0.0	0.00
Medical benefit	0.3	0.00	4.2	0.01	6.7	0.00
Phys. or Voc. Rehabilitation	0.0	0.00	0.0	0.00	18.3	0.00
Funeral benefit	0.0	0.00	6.0	0.01	11.0	0.00
Other expenses	65.1	0.51	34.8	0.05	27.5	0.01
Total	71.0	0.55	891.8	1.26	700.1	0.15
Administration	2,653.6	20.70	4,373.7	6.16	3,749.5	0.82
Total	2,724.6	21.26	5,265.4	7.42	4,449.6	0.98
Estimated Insured earnings	12,817		70,991		455,423	

Source: Table 1.2, Table 3.2 and SOCSO internal data

While the administrative expenses are high when expressed as percentage of insured salary, this situation is expected in the case of newly established scheme. In fact, the setup costs required for a new social security scheme is important in all cases and stakeholders should not construe the current situation of high costs as a percentage of insured earnings as representative of the figure over the long-term. In fact, a significant reduction of the administrative expenses when expressed as percentage of insured earnings can be observed in 2018 and then in 2019. This special situation will be considered in the setting of the administrative expense assumption of the actuarial projections.

Table 3.5 illustrates the trend of the relative costs since the inception of the scheme and the difference between the contribution rate and the relative cost, which could be considered as an implied margin.

► Table 3.5 Trend in relative costs (percent of the insured earnings)

Year	Relative cost (%)	Contribution Rate (%)	Margin
2017	21.26	1.25	-20.01
2018	7.42	1.25	-6.17
2019	0.98	1.25	0.27

Caution should be exercised when looking at the figures of Table 3.5 just after the inception of the scheme with voluntary membership as they reflect the important administrative work required to setup such a new scheme and the initial low level of membership.

3.6 Prospective cost analysis

Demographic and financial projections were carried out according to the methodology and assumptions described in Appendix 2 and Appendix 3. It has been assumed that the incidence and severity of temporary and permanent disablement benefits would remain constant over the projection period. The incidence of deaths is assumed to decrease more slowly than the mortality from all causes.

Table 3.6 presents the demographic projections for the long-term benefits (number of disablement and survivors' pensioners at the end of each year) and the temporary disablement benefits. The demographic ratio is the ratio of the number of pensioners to the number of active insured at risk. The latter is obtained by multiplying the number of active contributors by the density factor.

As the system is not yet fully mature, an increase of the demographic ratio of long-term benefits is expected in the context of stable frequency of injuries. The number of new awards then exceeds the number of exits. A change in the demographic ratio of TD benefits, often used as a basic indicator of the frequency of injuries (see Table 3.1), indicates a change in the distribution of the population by sex and age.

▶ Table 3.6 Demographic projections of SESSS (Stock of pensioners and temporary disablement)

Year	Average		Numbers				% per active insured			
	number of contributors ¹	PD pensions	Depe	ndents	TDB	PD pensions	Depe	ndents	0.70 0.70 0.70 0.71 0.72 0.73 0.74 0.75	
		pensions	Widow (ers)	Other dependents		pensions	Widow (ers)	Other dependents		
2020	101,328	11	10	12	709	0.01	0.01	0.01	0.70	
2021	307,341	23	20	26	2,166	0.01	0.01	0.01	0.70	
2022	365,282	50	44	57	2,569	0.01	0.01	0.02	0.70	
2023	438,959	95	82	107	3,112	0.02	0.02	0.02	0.71	
2024	515,328	148	128	165	3,695	0.03	0.02	0.03	0.72	
2025	594,364	210	181	232	4,320	0.04	0.03	0.04	0.73	
2026	675,865	281	243	307	4,984	0.04	0.04	0.05	0.74	
2027	759,743	363	313	390	5,687	0.05	0.04	0.05	0.75	
2028	846,120	455	391	479	6,431	0.05	0.05	0.06	0.76	
2029	935,226	559	479	574	7,223	0.06	0.05	0.06	0.77	
2034	1,178,942	1,231	1,032	1,109	10,930	0.10	0.09	0.09	0.93	
2039	1,263,091	1,951	1,622	1,469	10,250	0.15	0.13	0.12	0.81	
2044	1,327,520	2,667	2,211	1,603	11,046	0.20	0.17	0.12	0.83	
2049	1,352,404	3,375	2,798	1,582	11,493	0.25	0.21	0.12	0.85	
2059	1,308,500	4,586	3,786	1,381	11,389	0.35	0.29	0.11	0.87	
2069	1,235,934	5,300	4,236	1,222	10,532	0.43	0.34	0.10	0.85	

¹ Average number of contributors: active contributors x density

Table 3.7 presents another set of demographic projections related to awards of benefits.

▶ Table 3.7 Demographic projections of SESSS (Awards of pensions and funeral benefits)

Year	Average number	PD pensions	PD Lump	Depe	endents	Funeral
	of contributors ¹		sums	Widow (ers)	Other dependents	benefits
2020	101,328	11	166	10	12	12
2021	307,341	14	211	12	15	15
2022	365,282	43	662	36	47	46
2023	438,959	50	784	42	55	53
2024	515,328	61	949	50	65	63
2025	594,364	72	1,126	58	76	74
2026	675,865	84	1,316	67	88	85
2027	759,743	96	1,519	76	100	96
2028	846,120	109	1,735	86	113	108
2029	935,226	123	1,965	95	126	120
2034	1,178,942	175	2,795	126	170	158
2039	1,263,091	192	3,036	132	175	165
2044	1,327,520	212	3,232	143	174	177
2049	1,352,404	227	3,333	151	166	186
2059	1,308,500	231	3,243	147	142	182
2069	1,235,934	211	3,042	118	124	145

¹ Average number of contributors: active contributors x density

Table 3.8 presents the financial projections of employment injury benefits according to the financing system applicable for each.

► Table 3.8 Financial projections of SESSS benefits (MYR thousands) (costs reported according to the funding method)

Year	Insured	PD	PD lump	Depe	ndents	Funeral	TD	Other¹	Total	Total as % of
	earnings	pensions	sums	Widow (ers)	Orphans and parents	grants				insured earnings
2020	581,040	588	1,991	1,249	261	24	1,403	388	5,904	1.02
2021	1,867,940	757	2,463	1,481	326	31	4,464	1,225	10,747	0.58
2022	2,409,882	2,530	8,213	4,936	1,080	104	5,546	1,541	23,950	0.99
2023	3,169,383	3,168	10,379	6,096	1,324	129	7,062	1,989	30,148	0.95
2024	4,068,395	4,073	13,431	7,753	1,673	164	8,830	2,514	38,437	0.94
2025	5,128,318	5,138	17,035	9,676	2,073	204	11,030	3,165	48,321	0.94
2026	6,344,721	6,372	21,224	11,875	2,528	250	13,542	3,911	59,702	0.94
2027	7,749,074	7,791	26,055	14,346	3,039	301	16,426	4,771	72,729	0.94
2028	9,361,432	9,419	31,617	17,107	3,615	358	19,725	5,755	87,596	0.94
2029	11,203,171	11,278	37,979	20,188	4,258	421	23,494	6,881	104,499	0.93
2034	19,604,716	21,205	71,629	35,706	7,345	739	41,103	12,381	190,108	0.97
2039	27,569,744	30,334	101,245	49,149	9,647	1,012	58,598	18,023	268,008	0.97
2044	37,384,204	42,096	137,318	67,667	12,206	1,410	81,720	25,357	367,773	0.98
2049	49,024,337	56,367	180,288	90,359	15,059	1,914	109,715	34,359	488,063	1.00
2059	78,600,122	91,688	288,679	143,091	21,525	3,110	180,262	57,398	785,753	1.00
2069	123,851,575	142,352	455,273	192,771	31,261	4,135	277,541	88,316	1,191,649	0.96

The cost of PD pensions and dependents benefits is the present value of pensions awarded during the year. For all other benefits, the cost is the payments made during the year.

1 Includes Medical benefits, physical and vocational rehabilitation, constant attendance allowances, activities promoting safety and health, penalties written off and general expenditure not elsewhere classified.

The cost of benefits is fairly stable as it remains slightly under one percent of insurable earnings. There is variation at the beginning of the projection period because of the expansion of the newly established scheme. This is not a forecast, but an illustration of the financial results if experience is in line with the assumptions adopted. The occurrence of work-related accidents and the severity of injuries depend on several factors, including the industry mix, the safety conditions in workplaces and on the road, and the behaviour of workers both at the workplace and in transportation. The forecast of long-term changes in those factors is beyond the scope of this actuarial analysis.

Table 3.9 shows the financial projections of SESSS benefits according to the funding method and administrative expenses. The last column shows the cost of the scheme in each projection year. The current contribution rate of 1.25 percent of earnings seems sufficient to cover the cost during the projection period considering that the ratio of administrative expenses to insured earnings lies in the 0.10-0.15 percent range during the projection period.

► Table 3.9 Financial projections of SESSS benefits and administrative expenses (MYR thousands) (costs reported according to the funding method)

Year	Insured earnings	Benefits ¹	Administrative expenses	Total	Total as % of insured earnings
2020	581,040	5,904	3,750	9,654	1.66
2021	1,867,940	10,747	3,750	14,497	0.78
2022	2,409,882	23,950	3,750	27,699	1.15
2023	3,169,383	30,148	3,750	33,897	1.07
2024	4,068,395	38,437	3,931	42,368	1.04
2025	5,128,318	48,321	5,150	53,471	1.04
2026	6,344,721	59,702	6,609	66,311	1.05
2027	7,749,074	72,729	8,347	81,076	1.05
2028	9,361,432	87,596	10,406	98,002	1.05
2029	11,203,171	104,499	12,635	117,134	1.05
2034	19,604,716	190,108	25,528	215,636	1.10
2039	27,569,744	268,008	38,199	306,208	1.11
2044	37,384,204	367,773	53,580	421,353	1.13
2049	49,024,337	488,063	73,394	561,457	1.15
2059	78,600,122	785,753	133,924	919,677	1.17
2069	123,851,575	1,191,649	232,866	1,424,515	1.15

¹ The cost of PD pensions and dependents benefits is the present value of pensions awarded during the year. For all other benefits, the cost is the payments made during the year.

Table 3.10 presents the projections of the technical reserve calculated at the end of each year by using the projected number of pensioners, their average amount of pensions at the end of each year and the annuity factors defined as per the actuarial assumptions used for this report. This is a prospective calculation. It would differ from the result reported in the financial statements for the ESSS scheme administered by SOCSO, which is calculated retrospectively, and which depends on the actual benefits paid and investment returns realized by the fund and relies on outdated actuarial assumptions in the present value factor calculation. The prospective approach shown in Table 3.9 gives more adequate information on benefit liabilities than the method used by SOCSO.

The contingency reserve is based on the projected benefits expenditure and the capitalized present value of benefits awarded.

▶ Table 3.10 Projected prospective technical, contingency and free reserve (MYR thousands)

Year	Technical reserve	Contingency reserve	Free reserve	Ratio: Technical Reserve/ Long-term benefits
2020	2,054	2,952	57,473	1.0
2021	4,317	5,374	67,007	1.7
2022	9,741	11,975	69,049	1.1
2023	18,980	15,074	76,284	1.8
2024	30,521	19,219	86,126	2.3
2025	44,979	24,161	98,137	2.7
2026	62,781	29,851	112,750	3.0
2027	84,412	36,364	130,423	3.4
2028	110,364	43,798	151,713	3.7
2029	141,183	52,249	177,423	4.0
2034	378,907	95,054	356,803	5.9
2039	717,922	134,004	610,140	8.1
2044	1,165,148	183,886	952,762	9.6
2049	1,749,911	244,031	1,377,808	10.8
2059	3,372,460	392,877	2,444,636	13.2
2069	5,556,894	595,825	3,968,311	15.2

The ratio of the technical reserve over the long-term benefits expenditure varies slightly over the projection period. This reflects the maturing process of the SESSS scheme. The free reserves are building up over the projection period because the 1.25 percent contribution rate of insured earnings is higher than the cost of the benefits and administrative expenses of SESSS.

3.7 Adjustment of pensions for the maintenance of their real value

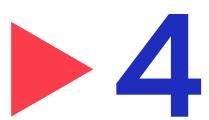
SOCSO has the administrative practice in the ESSS scheme to index the long-term benefits in payment according to the financial situation of the scheme. Currently there is no long-term benefit in payment in SESSS as per the current actuarial valuation date.

As per ILO Conventions, benefits in payment should be indexed to protect the purchasing power of the beneficiaries. National stakeholders should consider immediate indexation of benefits in SESSS, without regards to the financial situation of the scheme. The financial situation of the scheme should be specifically assessed through a formal funding policy taking into account automatic indexation rather than having indexation conditional on the funding situation of the scheme.

It is important to note that all long-term benefit amounts projected in this chapter are indexed annually as per the inflation rate assumption described in Appendix 3 of this actuarial valuation report.

3.8 Conclusions and recommendations

- (1) The overall financial situation of the scheme, as of 31 December 2019 was sound. However, the projections are uncertain as the scheme does not have a long experience to build upon; future actuarial valuations will be able to fully assess the financial sustainability of this scheme.
- (2) In order to help users of this report to fully understand the uncertainty related to the projections, Chapter 4 of this report focusses on sensitivity scenarios to analyse potential deviation from the base scenario that could happen in the experience of SESSS in the future.
- (3) National stakeholders should take the opportunity to automatically index the long-term benefits in payment in line with inflation. Contingencies related to the financial sustainability of the scheme should be directly addressed in a formal funding policy instead of relying on conditional indexing of benefits in payment. For reference, all actuarial projections of long-term benefits shown in this report assumes automatic annual indexation in line with the inflation assumption shown in Appendix 3 of the report.
- (4) It is recommended that the current contribution rate of 1.25 percent of insured salaries be maintained. The short experience of the scheme does not allow the actuaries to establish scheme's specific assumption that may impact the projected financial situation of SESSS. The contribution rate should be assessed at the next actuarial valuation based on the future observations.



Sensitivity of SESSS projections

4.1 Introduction

SESSS is a new scheme, and its experience is not yet statistically credible. This is normal at the start of any new scheme, and it is indeed good practice and in line with ILO ISSA Actuarial Guidelines to undertake an actuarial valuation at or close to the inception of any new scheme. This chapter will explain the main elements for national stakeholders to consider in the launching of a new social security scheme and show results of projection for selected sensitivity scenarios for selected assumptions.

4.2 General consideration for actuarial projections of new scheme

The assumption setting for the purpose of Chapter 3 relied heavily on the experience of the ESSS scheme. ESSS is administered by SOCSO and offers a benefit package that is identical to SESSS for the EI branch. Using this experience is considered the best estimate by the actuary as the recent and short experience of SESSS cannot be considered statistically credible. For example, there is no long-term invalidity pension in payment as of 31 December 2019, which is an exceptional situation that will not last in the future.

The nature of the work reflects the difference between the insured of ESSS and SESSS. However, the experience is too short to draw a clear picture on this matter at this stage. The actuaries that perform the next actuarial valuation will be in a better position to draw on the experience of SESSS and how it differs from ESSS. Even then, the experience of SESSS will still be relatively short as at the next valuation which needs to be reflected in how the valuation is undertaken and the recommendations arising from the results. In any case, it should not

prevent national stakeholders to continue implementing SESSS.

Cashflows of the SESSS show that a free reserve was constituted since the inception of the scheme. Whilst there could still be unprocessed claims that may change the financial situation of the scheme, this is a normal risk faced by social security schemes and unlikely to be material in the case of the SESSS. The conclusion of this report should be construed as showing a sustainable social security scheme that still has some uncertainty in its financial projections. Hence, national stakeholders should understand that the contribution rate could fluctuate in the future, based on emerging and more statistically credible experience.

In any case, contribution adjustments should always be part of the considerations of national stakeholders when it comes to covering EI risk. The nature of work in Malaysia may change over a long period of time, which will also in turn change the nature of the risk that requires insurance protection. As such, the contribution rate of the EI scheme can be expected to change to reflect these future societal changes.

In our opinion, the initial contribution rate setting of SESSS in line with ESSS is a good approach. However, it is important that SOCSO manages the expectation of the stakeholders related to this uniform rate setting. The EI contribution rate is sensitive to the risk profile of the insured workers and ESSS and SESSS are not covering the same type of workers. Future experience may prove that the risk profile of each scheme is different, and that the contribution rate should be adjusted to reflect that fact. Hence, a different contribution rate between the two schemes in the future is likely. National stakeholders should not focus on maintaining an equivalent contribution rate in the two schemes but establish the right contribution rate based on the observed risk profile of each one and based on appropriate actuarial and financing principles.

The next section of this chapter will focus on sensitivity scenarios to show which assumptions are sensitive (or not) for the purpose of the valuation results – i.e. to what extent changes in certain assumptions impact future cashflow amounts.

4.3 Sensitivity - Evolution of the covered population

Two sensitivity scenarios were developed to show the sensitivity of the financial projections of the covered population to changes in certain assumptions:

- Scenario A: The covered population will remain constant when expressed as a percentage of self-employed workers of Malaysia; and
- **Scenario B:** The covered population will increase twice as fast as per the base scenario, and the ultimate coverage rate of the scheme will represent 50 percent of the self-employed in Malaysia.

Coverage of the self-employed is always a challenge which can be seen in the experience of different countries observed by the ILO. However, for an EI scheme, this challenge has no significant impact on the financial situation of the scheme since the benefits are funded on a terminal funding basis.

Table 4.1 and 4.2 show the financial projections of SESSS for Scenario A and B respectively. Under both scenarios, the current contribution rate of 1.25 percent of covered earnings is still sufficient to cover the benefits of SESSS (without consideration of administrative expenses).

The difference in the results can be explained by the proportion of gender in each of the sensitivity scenarios. SESSS costs for males are higher than for females. The increase in coverage in scenario B decreases the ratio of insured males, which in turn reduces the cost for the scheme. Scenario A increases the ratio of insured males, which explains its slightly higher cost.

► Table 4.1 Financial projections of SESSS benefits under sensitivity Scenario A (MYR thousands) (costs reported according to the relevant funding method)

Year	Insured	PD	PD lump	Depe	ndents	Funeral	TD	Other ¹	Total	Total as % of
	earnings	pensions	sums	Widow (ers)	Orphans and parents	grants				insured earnings
2020	581,040	588	1,991	1,249	261	24	1,403	388	5,904	1.02
2021	1,867,940	757	2,463	1,481	326	31	4,464	1,225	10,747	0.58
2022	2,409,882	2,530	8,213	4,936	1,080	104	5,546	1,541	23,950	0.99
2023	2,696,601	3,168	10,379	6,096	1,324	129	6,108	1,731	28,935	1.07
2024	3,011,893	3,538	11,605	6,768	1,457	143	6,728	1,943	32,180	1.07
2025	3,359,891	3,945	12,957	7,494	1,599	158	7,509	2,200	35,862	1.07
2026	3,727,715	4,383	14,417	8,265	1,751	173	8,332	2,471	39,792	1.07
2027	4,126,374	4,854	15,988	9,066	1,909	189	9,218	2,762	43,986	1.07
2028	4,557,675	5,362	17,690	9,900	2,078	206	10,175	3,075	48,485	1.06
2029	5,023,614	5,910	19,526	10,775	2,256	223	11,212	3,412	53,315	1.06
2034	7,588,581	8,971	29,594	15,453	3,151	317	17,030	5,304	79,820	1.05
2039	10,674,498	12,827	41,775	21,269	4,138	435	24,258	7,627	112,328	1.05
2044	14,497,089	17,805	56,641	29,293	5,236	606	33,827	10,651	154,059	1.06
2049	19,026,375	23,845	74,343	39,134	6,460	823	45,415	14,368	204,388	1.07
2059	30,503,131	38,792	119,058	62,012	9,227	1,338	74,657	23,920	329,004	1.08
2069	47,960,447	60,184	187,607	83,469	13,391	1,776	114,827	36,736	497,991	1.04

¹ Includes Medical benefits, physical and vocational rehabilitation, constant attendance allowances, activities promoting safety and health, penalties written off and general expenditure not elsewhere classified.

► Table 4.2 Financial projections of SESSS benefits under sensitivity Scenario B (MYR thousands) (costs reported according to the relevant funding method)

Year	Insured	PD	PD lump	Depe	ndents	Funeral	TD	Other ¹	Total	Total as % of
	earnings	pensions	sums	Widow (ers)	Orphans and parents	grants				insured earnings
2020	581,040	588	1,991	1,249	261	24	1,403	388	5,904	1.02
2021	1,867,940	757	2,463	1,481	326	31	4,464	1,225	10,747	0.58
2022	2,409,882	2,530	8,213	4,936	1,080	104	5,546	1,541	23,950	0.99
2023	3,642,165	3,168	10,379	6,096	1,324	129	8,017	2,247	31,360	0.86
2024	5,124,898	4,608	15,257	8,739	1,888	185	10,932	3,085	44,694	0.87
2025	6,896,744	6,332	21,113	11,859	2,546	251	14,550	4,130	60,780	0.88
2026	8,961,727	8,361	28,031	15,485	3,305	326	18,751	5,352	79,613	0.89
2027	11,371,774	10,728	36,123	19,626	4,169	413	23,633	6,780	101,471	0.89
2028	14,165,189	13,476	45,544	24,314	5,152	510	29,276	8,436	126,707	0.89
2029	17,382,728	16,646	56,432	29,600	6,260	619	35,777	10,349	155,683	0.90
2034	33,378,152	33,984	116,765	56,259	11,649	1,171	66,870	19,918	306,616	0.92
2039	46,931,239	48,630	165,196	77,446	15,302	1,604	95,389	29,102	432,670	0.92
2044	63,575,317	67,474	224,103	106,594	19,360	2,234	133,035	41,032	593,832	0.93
2049	83,327,671	90,339	294,291	142,294	23,886	3,032	178,612	55,668	788,121	0.95
2059	133,602,747	146,932	471,168	225,219	34,162	4,922	293,348	93,050	1,268,802	0.95
2069	210,808,693	228,245	743,516	303,619	49,639	6,551	451,984	143,307	1,926,861	0.91

¹ Includes Medical benefits, physical and vocational rehabilitation, constant attendance allowances, activities promoting safety and health, penalties written off and general expenditure not elsewhere classified.

4.4 Sensitivity - Change in the incidence rate

One element of uncertainty that has an important financial impact is the incidence rate. The base scenario assumption assumes that the incidence rate of SESSS claims will be equivalent to the incidence rate of ESSS. Two sensitivity scenarios on the incidence rate are shown in this section of the report:

- **Scenario C:** Incidence rates are 25 percent lower than in the base scenario; and
- **Scenario D:** Incidence rates are 25 percent higher than in the base scenario.

As expected, these scenarios have a significant impact on the financial projections of SESSS. Under the higher incidence rate scenario, the current contribution rate of 1.25 percent of insured wages is not sufficient to ensure financial sustainability of the scheme after adding administration expenses. Monitoring of the incidence rate of SESSS in the future will be important and any significant deviation from the assumption will ultimately lead to a change in the contribution rate.

Table 4.3 and 4.4 show the financial projections of SESSS for Scenario C and D respectively.

► Table 4.3 Financial projections of SESSS benefits under sensitivity Scenario C (MYR thousands) (costs reported according to the relevant funding method)

Year	Insured	PD	PD lump	Depe	ndents	Funeral	TD	Other¹	Total	Total
	earnings	pensions	sums	Widow (ers)	Orphans and parents	grants				as % of insured earnings
2020	581,040	441	1,493	935	195	18	1,052	291	4,426	0.76
2021	1,867,940	568	1,847	1,108	244	23	3,348	919	8,058	0.43
2022	2,409,882	1,898	6,160	3,695	808	78	4,160	1,156	17,953	0.74
2023	3,169,383	2,376	7,784	4,563	991	96	5,297	1,492	22,599	0.71
2024	4,068,395	3,055	10,073	5,804	1,252	122	6,622	1,885	28,813	0.71
2025	5,128,318	3,854	12,776	7,243	1,551	153	8,272	2,374	36,223	0.71
2026	6,344,721	4,779	15,918	8,889	1,892	187	10,156	2,934	44,755	0.71
2027	7,749,074	5,843	19,542	10,738	2,274	225	12,319	3,578	54,520	0.70
2028	9,361,432	7,064	23,713	12,805	2,705	268	14,794	4,317	65,665	0.70
2029	11,203,171	8,458	28,484	15,111	3,186	315	17,621	5,160	78,337	0.70
2034	19,604,716	15,904	53,722	26,727	5,496	553	30,827	9,286	142,515	0.73
2039	27,569,744	22,750	75,934	36,790	7,219	758	43,948	13,517	200,917	0.73
2044	37,384,204	31,572	102,988	50,653	9,134	1,056	61,290	19,017	275,711	0.74
2049	49,024,337	42,275	135,216	67,643	11,270	1,433	82,286	25,770	365,893	0.75
2059	78,600,122	68,766	216,509	107,125	16,109	2,329	135,197	43,048	589,082	0.75
2069	123,851,575	106,764	341,455	144,313	23,394	3,096	208,156	66,237	893,414	0.72

¹ Includes Medical benefits, physical and vocational rehabilitation, constant attendance allowances, activities promoting safety and health, penalties written off and general expenditure not elsewhere classified.

► Table 4.4 Financial projections of SESSS benefits under sensitivity Scenario D (MYR thousands) (costs reported according to the relevant funding method)

Year	Insured	PD	PD lump	Depe	ndents	Funeral	TD	Other ¹	Total	Total as % of
	earnings	pensions	sums	Widow (ers)	Orphans and parents	grants				insured earnings
2020	581,040	735	2,489	1,564	327	30	1,754	485	7,384	1.27
2021	1,867,940	947	3,079	1,854	408	39	5,580	1,531	13,439	0.72
2022	2,409,882	3,163	10,266	6,182	1,353	130	6,933	1,926	29,952	1.24
2023	3,169,383	3,960	12,973	7,635	1,659	161	8,828	2,487	37,703	1.19
2024	4,068,395	5,091	16,789	9,711	2,095	205	11,037	3,142	48,070	1.18
2025	5,128,318	6,423	21,293	12,119	2,597	256	13,787	3,956	60,431	1.18
2026	6,344,721	7,965	26,530	14,873	3,167	313	16,927	4,889	74,664	1.18
2027	7,749,074	9,739	32,569	17,967	3,808	377	20,532	5,963	90,955	1.17
2028	9,361,432	11,773	39,521	21,426	4,529	448	24,657	7,194	109,548	1.17
2029	11,203,171	14,097	47,474	25,284	5,335	527	29,368	8,601	130,686	1.17
2034	19,604,716	26,506	89,537	44,720	9,202	925	51,379	15,476	237,745	1.21
2039	27,569,744	37,917	126,556	61,556	12,086	1,268	73,247	22,528	335,159	1.22
2044	37,384,204	52,620	171,647	84,744	15,291	1,766	102,150	31,696	459,914	1.23
2049	49,024,337	70,459	225,360	113,160	18,865	2,397	137,144	42,949	610,334	1.24
2059	78,600,122	114,610	360,848	179,187	26,965	3,894	225,328	71,747	982,579	1.25
2069	123,851,575	177,940	569,092	241,407	39,162	5,177	346,927	110,394	1,490,099	1.20

¹ Includes Medical benefits, physical and vocational rehabilitation, constant attendance allowances, activities promoting safety and health, penalties written off and general expenditure not elsewhere classified.

4.5 Sensitivity - Severity of claims

Another element of uncertainty that has an important financial impact is the severity of the claims (i.e. claim amounts). The base scenario assumption assumes that the severity of SESSS' claims is the same as ESSS. Two sensitivity scenarios on the claim's severity are shown in this section of the report:

- **Scenario E:** Severity of claims for disability (temporary and permanent) is 25 percent lower than in the base scenario; and
- **Scenario F:** Severity of claims for disability (temporary and permanent) is 25 percent higher than in the base scenario.

As expected, these scenarios have a significant impact on the financial projections of SESSS. Under the higher severity scenario, the current contribution rate of 1.25 percent of insured wages is not sufficient to ensure financial sustainability of the scheme after inclusion of administration expenses. Monitoring of the severity of SESSS' claims in the future will be important and any significant deviation from the base assumption will ultimately lead to a change in the contribution rate.

Table 4.5 and 4.6 show the financial projections of SESSS for Scenario E and F respectively.

► Table 4.5 Financial projections of SESSS benefits under sensitivity Scenario E (MYR thousands) (costs reported according to the relevant funding method)

Year	Insured	PD	PD lump	Depe	ndents	Funeral	TD	Other¹	Total	Total as % of
	earnings	pensions	sums	Widow (ers)	Orphans and parents	grants				insured earnings
2020	581,040	441	1,493	1,249	261	24	1,052	294	4,814	0.83
2021	1,867,940	568	1,847	1,481	326	31	3,348	924	8,525	0.46
2022	2,409,882	1,898	6,160	4,936	1,080	104	4,160	1,166	19,503	0.81
2023	3,169,383	2,376	7,784	6,096	1,324	129	5,297	1,513	24,518	0.77
2024	4,068,395	3,055	10,073	7,753	1,673	164	6,622	1,918	31,258	0.77
2025	5,128,318	3,854	12,776	9,676	2,073	204	8,272	2,420	39,276	0.77
2026	6,344,721	4,779	15,918	11,875	2,528	250	10,156	2,997	48,504	0.76
2027	7,749,074	5,843	19,542	14,346	3,039	301	12,319	3,662	59,052	0.76
2028	9,361,432	7,064	23,713	17,107	3,615	358	14,794	4,424	71,074	0.76
2029	11,203,171	8,458	28,484	20,188	4,258	421	17,621	5,295	84,725	0.76
2034	19,604,716	15,904	53,722	35,706	7,345	739	30,827	9,607	153,849	0.78
2039	27,569,744	22,750	75,934	49,149	9,647	1,012	43,948	14,067	216,509	0.79
2044	37,384,204	31,572	102,988	67,667	12,206	1,410	61,290	19,840	296,973	0.79
2049	49,024,337	42,275	135,216	90,359	15,059	1,914	82,286	26,954	394,064	0.80
2059	78,600,122	68,766	216,509	143,091	21,525	3,110	135,197	45,230	633,428	0.81
2069	123,851,575	106,764	341,455	192,771	31,261	4,135	208,156	69,581	954,124	0.77

1 Includes Medical benefits, physical and vocational rehabilitation, constant attendance allowances, activities promoting safety and health, penalties written off and general expenditure not elsewhere classified.

► Table 4.6 Financial projections of SESSS benefits under sensitivity Scenario F (MYR thousands) (costs reported according to the relevant funding method)

Year	Insured	PD	PD lump	Depe	ndents	Funeral	TD	Other¹	Total	Total as % of
	earnings	pensions	sums	Widow (ers)	Orphans and parents	grants				insured earnings
2020	581,040	735	2,489	1,249	261	24	1,754	483	6,994	1.20
2021	1,867,940	947	3,079	1,481	326	31	5,580	1,526	12,970	0.69
2022	2,409,882	3,163	10,266	4,936	1,080	104	6,933	1,915	28,396	1.18
2023	3,169,383	3,960	12,973	6,096	1,324	129	8,828	2,466	35,777	1.13
2024	4,068,395	5,091	16,789	7,753	1,673	164	11,037	3,110	45,617	1.12
2025	5,128,318	6,423	21,293	9,676	2,073	204	13,787	3,909	57,366	1.12
2026	6,344,721	7,965	26,530	11,875	2,528	250	16,927	4,825	70,901	1.12
2027	7,749,074	9,739	32,569	14,346	3,039	301	20,532	5,879	86,405	1.12
2028	9,361,432	11,773	39,521	17,107	3,615	358	24,657	7,087	104,118	1.11
2029	11,203,171	14,097	47,474	20,188	4,258	421	29,368	8,466	124,273	1.11
2034	19,604,716	26,506	89,537	35,706	7,345	739	51,379	15,156	226,367	1.15
2039	27,569,744	37,917	126,556	49,149	9,647	1,012	73,247	21,978	319,508	1.16
2044	37,384,204	52,620	171,647	67,667	12,206	1,410	102,150	30,873	438,572	1.17
2049	49,024,337	70,459	225,360	90,359	15,059	1,914	137,144	41,765	582,061	1.19
2059	78,600,122	114,610	360,848	143,091	21,525	3,110	225,328	69,565	938,078	1.19
2069	123,851,575	177,940	569,092	192,771	31,261	4,135	346,927	107,050	1,429,175	1.15

The cost of PD pensions and dependents benefits is the present value of pensions awarded during the year. For all other benefits, the cost is the payments made during the year.

1 Includes Medical benefits, physical and vocational rehabilitation, constant attendance allowances, activities promoting safety and health, penalties written off and general expenditure not elsewhere classified.



Other considerations for SESSS

As part of the project between the ILO and SOCSO, the ILO was requested to comment on the following elements for SESSS:

- ▶ Differential contribution-rate setting as per industry;
- Extension of the coverage to include invalidity coverage (IS) to SESSS; and
- ▶ Pooling of the funds between SESSS and ESSS.

This section will comment on these elements based on the limited experience of SESSS.

5.1 Setting contribution rates per industry

Industry-rate setting for EI scheme is a more evolved form of contribution setting. Usually, EI schemes start with a uniform rate setting approach (method currently in force for SESSS and ESSS). After a period of time, credible experience per industry for the EI scheme emerges and actuaries can then provide an assessment on the adjustment to the basic contribution rate that would allow for the setting of an appropriate contribution rate per industry.

SESSS is a very young scheme. Setting assumptions for the basic contribution rate was difficult, and this current actuarial valuation relies on the experience of another EI scheme in Malaysia, namely ESSS. While Chapter 3 of the current actuarial valuation shows that the scheme is sustainable under the base scenario, Chapter 4 highlights the sensitivity of this result to future experience that turns out differently to what is assumed in the base scenario.

It is important for SOCSO to ensure a stable and solid operation of SESSS before moving to greater sophistication in its rate setting. The current contribution rate might change in the near future based on emerging experience that is different than what is currently expected. This fact is important and should be communicated and understood by all relevant stakeholders. Implementing industry-rating before this stabilisation phase might send a confusing message to the relevant stakeholders. Knowing that a basic rate change may occur in the near future, contributors to the scheme might be confused by dual changes in the basic rate and industry-rate applicable to their industry.

One of the most important non-financial aspects of social security is the trust between the institution, the contributors and the beneficiaries. In order to build this trust, SOCSO should focus on stabilizing the current experience of SESSS before bringing additional financing, administrative and reporting complexity to the scheme. Changing rapidly and frequently the contribution rate of a new scheme may weaken the trust between the contributors and the administering agency and therefore the confidence of current and potential members of the scheme may reduce.

SOCSO is contemplating introducing industry rating in the ESSS. As this scheme has statistically credible experience data to perform the required analysis, it is legitimate to consider if some of its results could apply to the SESSS. This however is not possible because the classification of insured risks is based on two different systems and there is no correspondence table between them. Nevertheless, depending on the evolution of the covered population by industry in SESSS, it may become possible to use some part of the experience of the ESSS scheme in the development of industry rating for SESSS in the medium term.

When coverage is optional as in the case of the SESSS, it can be expected that workers in high-risk industry will have a greater propensity to join than others because they get protection at low cost. This phenomenon would have the effect of producing higher costs, which could lead to an increase of the rate, which would have the effect of putting off more workers and leaving only members with very high risk withing the scheme. It is a vicious circle and move the scheme away from a risk pooling arrangement. Fair and equitable pricing by industry then becomes a useful tool to enable workers in all industries to benefit from protection at a reasonable cost.

5.2 Extension of benefit package to include invalidity coverage

SOCSO is contemplating the extension of the benefit package to add the invalidity coverage (IS) on the same basis as is the case in ESSS.

Based on the limited and non-statistically credible experience of SESSS, the ILO needs to rely on the experience of ESSS in order to derive a contribution rate that would allow for financial sustainability of that branch. Based on the projections performed for the IS branch of ESSS, the additional contribution rate would need to be slightly above 2.00 percent of insured wages at the beginning of the projection period and would end up slightly below 4.00 percent of insured wages at the end of the projection period.⁵

The real issue at stake here is the dire financial situation of the IS branch of ESSS. As stated in the 11th Actuarial Valuation Report of ESSS, this branch is quickly exhausting its reserve due to an insufficient contribution rate of 1.00 percent of insured wages. Implementing the IS branch in SESSS at its real costs would leave an impression of unfairness amongst the different categories of insured workers. ESSS would benefit from a coverage that cost more than the contribution levied, which would not be the case for SESSS. This is a matter of perception of inequitable treatment as well as a financial matter that needs to be addressed.

In the current and previous actuarial valuations of ESSS, the ILO has emphasised that the financial situation of the IS branch of ESSS needs to be addressed. As at the time of writing however, there was no significant change brought to the financing of the IS branch during this time. We understand that there is a willingness to initiate

⁵ For more details, please consult Chapter 4 of Report to the Government – Social Security Organization – The Eleventh Actuarial Valuation of the Employees' Social Security Act as of 31 December 2019.

a national dialogue in Malaysia with regards to the future of social protection coverage, with a specific focus on the future of the IS branch of ESSS. The ILO will be willing and available to support technically this national dialogue, which needs to address the financial sustainability of the IS branch of ESSS.

Until the national dialogue exercise is completed, it is not recommended to implement IS coverage in the SESSS. Since the implementation of SESSS, the stakeholders are expecting that the coverage of ESSS and SESSS will be similar, and that their cost would reflect the risk covered by each scheme. Knowing that changes will be brought to the IS branch of ESSS (either through contribution increase, benefit reduction or a mix of both), SOCSO should wait to apply the same measures to the IS branch of SESSS. If SESSS was extended to cover IS branch with structures similar to ESSS, the appropriate contribution rate should be set to ensure long-term sustainability.

5.3 Pooling of ESSS and SESSS

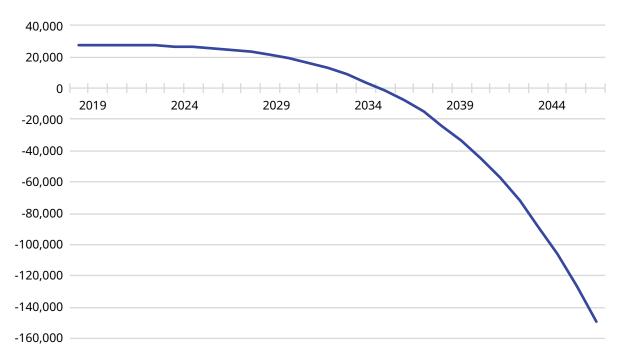
This section discusses the potential pooling of the funds between ESSS and SESSS. The proposal goes against best international practice, good governance principles and the general advice of the ILO, in which each branch of social security should be financed and treated independently. This best practice makes even more sense in the context of Malaysia and the ESSS scheme. The contribution is fully borne by employers for the EI branch of ESSS and paid by workers and employers for the IS branch. Monitoring of each branch separately allows for the relevant stakeholders to take action on changing the contribution rate when required and to decide to redistribute surplus, if any, to the contributors.

In fact, the non-financial segregation of funds at ESSS has led to a challenging situation. On one hand, the EI branch, which is fully financed by employers, is financially sustainable, with a probability of accumulating significant surpluses in the future. On the other hand, the IS branch, financed equally by workers and employers, is in a dire financial situation and the fund could be exhausted as soon as in two years. However, the financial situation of both branches of ESSS scheme is reported as one, which does not allow stakeholders to take informed decisions. Employers could argue that the potential surplus in EI is their own and could argue for a contribution break (similar to a refund of surplus), while on the other side stakeholders need to take action (either on the benefit side or on the contribution side) to make the IS branch sustainable again.

Adding the SESSS into that mix will only makes things even more complicated. We strongly recommend that SOCSO should administer all social security branches under its responsibility as individual schemes. Each branch of each scheme will have its own issues and therefore its own solutions to maintain financial sustainability. The ILO does not support cross-subsidization of social security branches, as it often leads to promises of future reimbursement that are not met. In those cases, the situation may worsen the financial situation of two branches of social security instead of only one when this cross-subsidization takes place.

Even though the ILO does not support the pooling of SESSS and ESSS funds, a quick financial projection, as required in the terms of reference between the two organizations, was performed to see if it changes the global picture of the financial sustainability of SOCSO. As expected, it does not affect the sustainability of SOCSO. The scale of SESSS is very small compared to ESSS, which is the main driver in the financial sustainability of SOCSO. The overall merged fund would still be depleted in 2035, as was the case in the base scenario of the 11th Actuarial Review of ESSS. Figure 5.1 shows the evolution of the combined fund of ESSS and SESSS over the projection period.

▶ Figure 5.1 Illustration of the evolution of funds- Pooling of ESSS and SESSS (MYR million)



Actuarial opinion

In our opinion,

- the data upon which the report is based are sufficient and reliable;
- the assumptions used for the report are reasonable and appropriate both in the aggregate and individually, even if they do mostly rely on statistically credible experience of the Employees' Social Security Scheme. It is expected that the assumptions will be based on more robust data in future actuarial valuations as more experience will emerge from the scheme; and
- b the methodology employed is appropriate and consistent with accepted actuarial practice.

Based on the results of this valuation, we hereby certify that the Self-Employed Social Security Scheme, administered by the Social Security Organization (SOCSO) is financially sustainable over the period covered by the projections in this report.

This report and the opinions given have been prepared in accordance with the internationally accepted actuarial practice as provided under the *International Standard of Actuarial Practice 2 – Financial Analysis of Social Security Programs* of the International Actuarial Association.

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18 April 2022

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Description of the Self-Employment Social Security Scheme (as adopted for the first valuation)

This appendix provides a general overview of the key coverage, contribution and benefit provisions of the SESSS scheme as of 31 December 2019 including certain modifications to be implemented beyond this date that are known at the time of performing the valuation.

Legislation

The Self-Employment Employees' Social Security Act, providing employment injury and invalidity benefits.

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

Since 1 July 2017, taxi drivers and individuals carrying out such services including Grab drivers have been eligible for coverage. In 2019, the coverage was expanded to bus drivers. On 1 January 2020, coverage has been extended to independent workers of all informal occupation sectors listed in the First Schedule of Act 789. For determining contributions and benefits, the earnings are limited to a maximum of RM4,000 per month.

Contribution provisions

Insured persons are classified into one of the different wage classes for each of which an assumed wage is specified in ringgit. There are 45 wage classes in legislation with the 45th class including those earning more than RM4,000. However, taxi drivers were given four income options (RM 1,050, 1,550, 2,950 and 3,950). Contributions for employment injury benefits represent 1.25 percent of the assumed wage of the wage class and are entirely at the charge of the worker.

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 percent of the reference wage i.e. one-thirtieth of the average assumed monthly wage over the preceding six months - subject to a minimum of MYR30 per day and to a maximum of MYR105.33 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 percent of the reference wage, subject to a minimum of MYR30 per day. The benefit rate for partial disablement is proportional to the degree of disablement. If the degree is 20 percent or less, the benefit can be commuted into a lump sum; if the degree exceeds 20 percent, one-fifth of the benefit can be commuted. A constant attendance allowance of MYR500 per month is payable to total disablement pensioners.

"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 percent 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 percent for parents and grandparents, 30 percent 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" (MYR2,000) 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.

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

Methodology of the actuarial valuation

This actuarial review makes use of the comprehensive methodology developed at the Financial, Actuarial and Statistical Services of the ILO for reviewing the long-term actuarial and financial status of national social security systems. These modelling tools include a population model, an economic model, a labour force model, a wage model, a long-term benefits model, a short-term benefits model and an employment injury model. It is the same approach as used in the 11th Actuarial valuation of the ESSS as at 31 December 2019.

The actuarial valuation starts with a projection of the future demographic and economic environment of Malaysia. Next, projection factors specifically related to SOCSO are determined and used in combination with the demographic and economic framework.

A2.1 Modelling the demographic and economic environment

The use of the ILO actuarial projection model requires the development of demographic and economic assumptions related to the general population, the economic growth, the labour market and the increase and distribution of wages. Other economic assumptions relate to the future rate of return on investments, the indexation of benefits and the adjustment of parameters like the maximum insurable earnings and the future level of flat-rate benefits.

The selection of projection assumptions takes into account the recent experience of the SOCSO to the extent this information was available. The assumptions are selected to reflect long-term trends rather than giving undue weight to recent experience.

General population

General population is projected starting with most current data on the general population, and applying appropriate mortality, fertility and migration assumptions.

Economic growth

Increase of the GDP growth, wage share of GDP and inflation rates are exogenous inputs to the economic model. The long-term productivity of labour assumption is the result of assumptions on the future evolution of the labour force, wage share of GDP and GDP growth.

Labour force, employment and insured population

The projection of the labour force, i.e. the number of persons available for work, is obtained by applying assumed labour force participation rates to the projected number of persons in the general population. Unemployment rates are assumed for the future and employment is calculated as the difference between labour force and unemployment.

The model assumes movement of participants between the groups of active and inactive insured persons.

Wages

Based on an allocation of total GDP to capital income and to labour income, a starting average wage is calculated by dividing the wage share of GDP by the total number of employed persons.

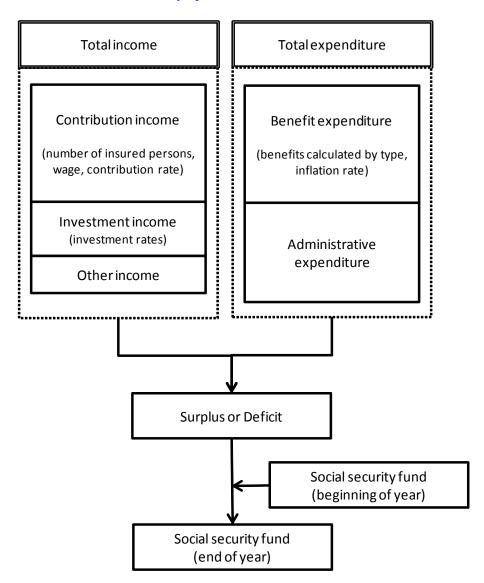
In the medium term, real wage development is checked against the labour productivity growth. In specific labour market situations, wages might grow at a pace faster or slower than productivity. However, due to the long-term perspective of the present review, the real wage increase is assumed to gradually converge with real labour productivity. It is expected that wages will adjust to efficiency levels over time.

Wage distribution assumptions are also needed to simulate the possible impact of the social protection system on the distribution of income, for example through minimum and maximum pension provisions. Assumptions on the differentiation of wages by age and sex are established, as well as assumptions on the dispersion of wages between income groups.

A2.2 Modelling the financial development of the SOCSO

The present actuarial review addresses all revenue and expenditure items of the SOCSO. Income and expenditures related to Employment Injury are projected. Chart A2.1 presents the flow of financial balance projection. The most important components of this budget concern long-term benefits (IS and EI pensions). Pensions are projected separately for each sex and age. For Short-term benefits, income and expenditures are projected using simple projection methods based on recent experience. Chart A2.2 summarizes the projection methodology of insured persons and beneficiaries.

► Chart A2.1 Flow of financial balance projection



Number of total population labour force Unemployment rate Number of employed persons Coverage rate Number of insured persons Accident rate, disablement rate, mortality rate Short-term benefit Long-term benefit Type of benefit

► Chart A2.2 Projection methodology of insured persons and beneficiaries

Purpose of pension projections

The purpose of the pension model is twofold. First, it is used to assess the financial viability of the long-term benefits of the schemes. This refers to the measure of the long-term balance between income and expenditure of the system. In case of imbalance, a revision of the contribution rate or the benefit structure is recommended. Second, the model may be used to examine the financial impact of different reform options, thus assisting policymakers in the design of benefit and financing provisions. More specifically, the pension model is used to develop long-term projections of expenditures and insurable earnings under the system, for the purpose of:

Newly awarded pension Pension in payment

- assessing the options to build up a contingency or a technical reserve;
- proposing schedules of contribution rates consistent with the funding objective;

Lump sum

b testing how the system reacts to changing economic and demographic conditions.

Pension data and assumptions

In addition to the demographic and macro-economic frame already described, pension projections require a set of assumptions specific to the SOCSO.

The database as of the valuation date includes the insured population by active and inactive status, the distribution of insurable wages among contributors, the distribution of past credited service and pensions in payment. Data are disaggregated by age and sex.

System-specific assumptions such as the disability incidence rates and the distribution of leaving and re-entry by age are determined with reference to the system provisions and the historical experience under the system.

The projection of the annual investment income requires information on the existing assets on the valuation date. A rate of return assumption is formulated based on the nature of the system's assets, the past performance of the Fund, the system's investment policy and assumptions on future economic growth and wage development.

Pension projection approach

Pension projections are performed following a year-by-year cohort methodology. The existing population is aged and gradually replaced by the successive cohorts of participants on an annual basis according to the demographic and coverage assumptions. The projection of insurable earnings and benefit expenditures are then performed according to the economic assumptions and the system's provisions.

Invalidity pensions and permanent disablement benefits are long-term benefits. Hence the financial obligations that a society accepts when adopting financing provisions and benefit provisions for them are also of a long-term nature.

The objective of pension projections is not to forecast the exact development of income and expenditures of the system, but to check its financial viability. This entails evaluating the system with regard to the relative balance between future revenue and expenditure.

Projection approach for benefits other than pensions

The projection of funeral benefits is made by the pension models. In each projection year, the funeral grant is multiplied by the number of deceased insured and deceased pensioners.

The projection of the constant attendance allowance is done separately for EI and IS branches by adapting the pension models. The probability of being awarded a CAA is based on SOCSO experience.

The projected cost of temporary disability benefits is the product of the projected number of temporary disability beneficiaries and the average amount of temporary disability benefit. The projected number of temporary disability beneficiaries is obtained by applying an incidence rate (varying by sex and age) to the EI insured population. The incidence rate and the average amount of benefit are based on SOCSO recent experience. The average amount of benefits is determined as follows:

Replacement rate x SalTD(s,x) x Dur(s,x), where

Replacement rate = 0.80

SalTD(s,x) = reference salary by sex and age

Dur(s,x) = average duration of temporary disability by sex and age

The projected cost of physical and vocational rehabilitation treatment by sex and age under the EI branch is the product of the projected number of beneficiaries and the average amount of benefit, which is the same for both sexes and all ages. The projected number of beneficiaries is obtained by multiplying an incidence rate (varying by sex and age) to the population of temporary disability beneficiaries. The projected number of beneficiaries is

obtained by multiplying a prevalence rate (varying by sex and age) to the population of new awards of invalidity pension. The incidence rates and the average amount of benefits are based on SOCSO experience. The average amount of benefit is indexed to the salary growth.

The projected cost of the dialysis program is the product of the projected number of beneficiaries and the annual average cost of dialysis. The projected number of beneficiaries by age and sex is obtained by multiplying a prevalence rate by age and sex to the projected insured population by age and sex. The average annual cost is the same for both sexes and all ages. The prevalence rate and the annual average cost of dialysis are based on SOCSO experience. The annual average cost of dialysis is indexed to the salary growth.

As to medical benefits, health screening facilities, cost of medical and appellate boards, activities promoting safety and health, penalties written off and general expenditure not elsewhere classified, their costs are projected on an aggregate approach. The costs of medical benefits and other benefits are projected separately as percentages of the cost of rehabilitation =.



Appendix 3

SESSS specific data and assumptions

In addition to the demographic and economic assumptions presented in Section 2, the projection of the future financial development of SESSS requires a database specific to the system (characteristics of insured persons and pensions in payment) and some specific actuarial assumptions.

A3.1 Data and assumptions on the insured population

Number of insured persons

The 2019 population presented in Table A3.1 indicates the coverage of the SESSS.

► Table A3.1 SESSS Insured persons, by age and sex, in 2019

Age		Active	
	Male	Female	Total
15-19	36	1	37
20-24	2,498	216	2,714
25-29	5,501	545	6,046
30-34	7,885	736	8,622
35-39	8,714	850	9,563
40-44	8,792	959	9,751
45-49	8,702	895	9,597
50-54	8,333	654	8,987
55-59	7,776	401	8,177
60-64	6,359	197	6,556
65+	3,875	58	3,933
Total	68,471	5,513	73,984

The projection of the insured population into the projection period is performed on a two-fold basis. First, the number of participants in 2020 and 2021 is based on the complete and partial (respectively for 2020 and 2021) records in the system related to the active members. It is assumed that the population of 2021, which is estimated at 265,291 for males and 41,650 for females, represents approximately 12 percent and 4 percent of self-employed male and female respectively. From 2022, it is assumed that the coverage rate of the self-employed will increase by 2 percent every year to reach its ultimate level in 2031 at 32 percent for male and at 24 percent for female. Afterward, this coverage rate will remain constant for the remainder of the projection period.

The projection of the insured population is calculated by applying an adjusted coverage rates (by age and sex, as per the scenario described above) to the self-employed population as determined under the economic framework. Age-specific coverage rates are assumed constant for the whole projection period. Coverage rates appearing in Table A3.2 are calculated as the ratio of insured persons to the employed population at the corresponding age.

► Table A3.2 SESSS coverage rates, by age and sex (2019 and 2069)

Age	2019		20	69
	Male (%)	Female (%)	Male (%)	Female (%)
17	0	0	22	5
22	2	0	36	12
27	3	0	35	18
32	4	0	32	20
37	4	1	30	26
42	4	1	32	33
47	3	1	31	32
52	3	1	30	25
57	3	0	30	20
62	4	0	31	17
Total	3	1	32	24

Insurable earnings

Table A3.3 shows the average insurable earnings of active contributors. The figures are based on the data provided by SOCSO related to the insured of SESSS.

► Table A3.3 Average monthly insurable earnings (MYR), SESSS

Age group	First valuation (2019	9)
	Male	Female
15-19	1,050	1,080
20-24	1,154	1,187
25-29	1,215	1,161
30-34	1,248	1,206
35-39	1,285	1,285
40-44	1,289	1,265
45-49	1,301	1,281
50-54	1,271	1,273
55-59	1,250	1,271
60+	1,177	1,219
Average	1,251	1,249

Source: SOSCO internal data

The average monthly insured salary of the contributing population is derived from the salary class distributions of the employee database. These figures are based on an analysis of contributions in a given month of each year, so that they reflect the actual salary, i.e. they are not affected by the contribution density. As a comparison, the earning levels are less than 50% of earning levels of local workers from ages 30 and above. This has a consequence on the cost of the scheme as a percentage of insured earnings as a number of benefits are not related to earnings (e.g. medical costs).

In order to take into account the effect of minimum and maximum limits on salary-based benefits, the average salary by age and sex is refined into three salary groups, the 30 percent lowest salaries, the 30 percent highest salaries and the remaining 40 per cent of salaries in the middle. The distribution of insured persons according to their salary is assumed to remain constant over the projection period. The average salary by age, sex and salary group is projected according to the assumption of wage increase.

Density of contributions

Density of contribution represents the proportion of the year during which the average contributor pays contributions. Density factor by age and sex were obtained from SESSS' database maintained by SOCSO. Sample density factors appear in Table A3.4. They increase from their starting level before reaching an overall density of 50 percent in 2031 for males and in 2032 for females and then they remain constant.

► Table A3.4	SESSS densit	y factors,	by age and se	X
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Age	2019		2069	
	Male (%)	Female (%)	Male (%)	Female (%)
17	11	16	22	25
22	25	27	26	29
27	29	30	31	33
32	32	34	35	38
37	34	36	40	42
42	39	38	44	47
47	41	47	49	51
52	46	47	53	56
57	50	51	58	60
62	54	48	62	65
Total	41	40	50	50

A3.2 Demographic assumptions related to the scheme

As stated in the report, the short experience of SESSS cannot be considered statistically credible. As such, the experience of ESSS was used as a best estimate in order to address the lack of statistical credibility of the experience of SESSS. Overtime, SESSS scheme experience means that ESSS will no longer need to be used.

Mortality of insured persons

Mortality rates for the insured population have been assumed to be equal to the mortality rates of the general population (sample mortality rates are presented in Table A3.5). Mortality rates are assumed to decline continuously during the projection period in line with the assumed increase of average life expectancy. This mortality pattern is also used to project survivors' benefits payable on the death of insured persons or pensioners. For disability pensioners of SESSS, it is assumed that mortality rates are equal to five times those of the general population at age 20, decreasing gradually to twice as much at age 60 and to be equal at age 80. The adjustment is constant throughout the projection period. Mortality adjustments are based on an analysis of the experience in the period 2015-19 of ESSS through comparison of the observed number of deaths and the expected number based on the mortality table used for the general population.

▶ Table A3.5 Sample mortality rates (per 100) by age and sex

	The state of the s			
Age	Ma	le	Fem	nale
	2019	2069	2019	2069
0	0.677	0.294	0.586	0.246
5	0.022	0.011	0.023	0.011
10	0.031	0.013	0.019	0.010
15	0.065	0.028	0.025	0.011
20	0.086	0.039	0.033	0.017
25	0.096	0.047	0.042	0.023
30	0.120	0.063	0.058	0.029
35	0.186	0.095	0.088	0.039
40	0.290	0.145	0.141	0.067
45	0.447	0.228	0.228	0.115
50	0.683	0.352	0.367	0.185
55	1.009	0.503	0.577	0.276
60	1.474	0.706	0.875	0.402
65	2.263	1.057	1.371	0.625
70	3.515	1.620	2.295	1.085
75	5.154	2.499	3.962	2.088
80	7.126	3.861	6.699	3.851
85	9.507	6.054	11.327	6.733
90	17.590	9.641	21.640	11.139
95	76.278	14.410	53.824	16.475
100	100.000	100.000	100.000	100.000

Family structure

Information on the family structure of the insured is necessary for the projection of survivors' benefits. Assumptions have to be established on the probability of being married at death, the average age of the spouses, the average number of children, siblings and parents possibly eligible for benefits and their average age. Sample assumptions are shown in Table A3.6 for SESSS.

► Table A3.6 Family statistics, SESSS

Age		C	ecease	d male				ı	Decease	d female	•	
	Spot	ise	Orpha sibli		Pare	ents	Spot	ıse	Orpha sibli		Pare	ents
	Probability (%)	Average age	Average number	Average age	Average number	Average age	Probability (%)	Average age	Average number	Average age	Average number	Average age
17	1	17	-	-	1.05	47	-	-	-	-	1.48	47
22	8	21	1.36	13	1.18	51	17	24	1.34	12	1.26	51
27	33	26	1.05	10	1.01	55	28	30	1.11	9	0.70	55
32	66	30	1.26	6	0.47	59	32	35	1.42	7	0.34	59
37	76	35	1.91	7	0.28	63	38	40	1.76	9	0.23	63
42	77	39	2.32	10	0.19	67	46	45	1.91	12	0.22	67
47	86	44	2.28	13	0.07	71	53	50	1.78	15	0.13	72
52	84	48	1.72	14	0.05	75	59	55	1.13	17	0.03	76
57	89	53	0.93	16	-	-	57	60	0.44	15	0.02	80
62	86	57	0.42	17	-	-	41	66	0.13	12	-	-
67	83	61	0.05	18	-	-	25	71	-	-	-	-
72	80	66	-	-	-	-	10	76	-	-	-	-
77	77	70	-	-	-	-	-	-	-	-	-	-
82	74	75	-	-	-	-	-	-	-	-	-	-
87	71	80	-	_	-	-	_	_	-	-	-	-

A3.3 Data and assumptions specific to SESSS

For the demographic and financial projections of SESSS, a certain number of assumptions have to be set. They have been determined by using the experience of the inter-valuation period of ESSS, i.e. 2015 to 2019. Generally speaking, an average of the 5-year experience has been used. Smoothing techniques are used in order to avoid certain irregularities in the patterns due to small volumes of data. Assumptions are determined by sex and single age. The following tables show the assumptions for selected ages.

Temporary disablement

Table A3.7 presents the assumptions used for the projection of temporary disablement benefits for SESSS.

► Table A3.7 Temporary disablement, SESSS

Ago	Tempo Incidenc	rary disablement	Average duratio	an (days)
Age	Male	Female	Male	Female
22	0.0157	0.0042	50.8	44.7
27	0.0145	0.0038	51.5	46.7
32	0.0153	0.0042	55.5	50.3
37	0.0162	0.0050	58.6	54.9
42	0.0169	0.0058	58.9	57.2
47	0.0172	0.0070	58.9	56.3
52	0.0182	0.0096	60.3	58.4
57	0.0198	0.0111	61.6	56.8
62	0.0253	0.0127	61.0	55.2
67	0.0315	0.0145	59.1	59.4

The temporary disablement incidence rate is applicable to the average insured population.

The average amount of temporary disablement benefits is determined by using the projected earnings by sex and age and applying an adjustment factor of 0.93573. The amount of pension is based on earnings of insured and adjusted to take into consideration the difference between the earnings of benefit recipients and those of insured.

Rehabilitation, medical and other benefits

Rehabilitation benefits are projected as 15 percent of the amount of temporary disability benefits. Medical benefits are projected as 2 percent of the amount of temporary disability benefits. As for other benefits that include cost of medical and appellate boards, activities promoting safety and health, penalties written off and general expenditure not elsewhere classified, they are estimated at 10 percent of the amount of temporary disability benefits.

Permanent disablement (including constant attendance allowances)

Several assumptions need to be set for the projection of permanent disablement benefits as a distinction must be made between beneficiaries receiving a pension or a lump sum or a combination of both. The model determines the number of new awards and separates them into appropriate categories of payment by using the variables shown in Table A3.8. The incidence of new cases of constant attendance allowances is determined as a proportion of pension awards.

▶ Table A3.8 Permanent disablement and constant attendance allowance (CAA) incidence, SESSS

Age	Permanent incide		% of disable a pens		% of per commuting		% of pens awarded	
	Male	Female	Male	Female	Male	Female	Male	Female
22	0.00361	0.00082	5.2	3.0	97.2	94.8	6.1	4.0
27	0.00427	0.00091	4.2	2.8	95.1	98.2	5.5	8.5
32	0.00505	0.00118	3.9	2.1	94.6	88.7	4.9	6.5
37	0.00588	0.00163	3.8	2.5	85.6	96.8	3.7	3.3
42	0.00628	0.00198	4.2	2.7	81.8	85.9	2.3	4.7
47	0.00643	0.00231	4.6	3.0	82.1	92.0	2.8	4.3
52	0.00659	0.00325	6.3	3.3	82.4	96.0	4.2	3.9
57	0.00706	0.00356	7.2	3.3	79.9	91.8	3.5	2.3
62	0.00735	0.00322	7.0	4.1	81.2	100.0	7.0	4.8
67	0.00624	0.00242	8.5	6.3	82.5	100.0	9.7	9.7

Table A3.9 shows the average degree of disablement separately for the pensioners (including those commuting part of their pension) and those receiving a lump sum only.

► Table A3.9 Average degree of disablement, SESSS (percent)

Age	Beneficiaries receiving an income	Beneficiaries receiving a lump sum only
22	44.8	4.4
27	45.4	4.3
32	40.3	4.4
37	36.4	4.6
42	33.9	4.6
47	37.0	4.6
52	34.5	4.8
57	32.5	4.9
62	38.0	5.2
67	43.1	5.7

Work-related deaths

The model generates the work-related deaths (including commuting accidents) by applying a coefficient to the total number of deaths. Table A3.10 presents the coefficients applied in 2020. In the projection period, the coefficients are increased annually by 0.5 percent in order to partially offset the impact of mortality improvement for all causes. It is therefore assumed that the frequency of work-related accidents will decrease more slowly than the mortality rates in the population⁶. The survivors' pensions are determined by using the assumptions related to the family composition.

▶ Table A3.10 Proportion of deaths due to work-related accidents and diseases, SESSS

Age	Male (%)	Female (%)
22	37.7	14.5
27	21.1	6.9
32	14.5	4.6
37	9.0	2.5
42	5.3	2.1
47	4.2	1.5
52	3.3	1.4
57	3.3	1.0
62	5.6	1.4
67	4.5	0.8

The amount of pension is based on earnings of insured and adjusted to take into consideration the difference between the earnings of benefit recipients and those of the insured. Adjustment factors are shown in Table A3.11.

▶ Table A3.11 Adjustment factors in calculation of benefits, SESSS

Benefit	Male	Female
PDNew awards (Periodical)	84%	72%
PDNew awards (LS only)	106%	91%
Death benefit	91%	78%

Table A3.12 shows the replacement rates that are used in projecting survivors' benefits. The replacement rates defined by the scheme provisions are adjusted to take into account the survivors' degree of dependency.

⁶ This assumption is added to avoid underestimation of costs for work-related deaths. Generally, there is no evidence that safety and security at workplace will improve as fast as the general health condition of the general population.

▶ Table A3.12 Adjusted replacement rates of survivors' benefits, local and foreign workers

Beneficiaries	Male insured	Female insured
Widow(er)s	60%	60%
Orphans	34%	34%
Parents	27%	27%

A3.4 Other assumptions

Adjustment factors applied to the earnings used in determining pension amounts

Table A3.13 shows the adjustment factors that are applied to the earnings used in determining newly awarded pension amounts of the projection period to take into consideration the difference between the earnings of benefit recipients and those of other insured.

▶ Table A3.13 Adjustment factors in calculation of benefits

Benefit	Male	Female
Invalidity pension	81%	71%
Survivors' pension	77%	70%

Table A3.14 shows the replacement rates that are used in projecting survivors' benefits. The replacement rates defined by the scheme provisions are adjusted to take into account the survivors' degree of dependence.

► Table A3.14 Adjusted replacement rates of survivors' benefits

Beneficiaries	Male insured	Female insured
Widow(er)s	60%	60%
Orphans	40%	40%
Parents	31%	37%

Indexing of system's parameters and pensions in payment

Maximum insurable earnings are MYR4,000 per month on 1 January 2020. For the remainder of the projection period, the maximum insurable earnings are indexed annually in line with the increase of the national average wage. The MIE indexation is reflected in the maximum benefits and in other fixed parameters of the system from 1 January 2021.

The pensions in payment are assumed to increase annually from 1 January 2020 in line with the CPI.

Administrative expenses

Setting up costs of the new scheme need to be considered in the setting of the assumption of SESSS. While the costs are high at the beginning of the scheme, it is expected that the scheme will reach the same level of administrative expense that is observed in ESSS when expressed either as a percentage of covered earnings or paid benefits.

For the period covering years 2020 to 2028, the administrative expense assumption is a mix between the observed figures for SESSS and the assumption used for the 11th Actuarial Review of ESSS. For 2020 to 2028, the administrative expenses are determined as the maximum nominal value determined as such:

- MYR3,750,000, which is the value of the administrative expenses of SESSS in 2019; and
- For 2020, 14.0 percent of benefits. For the years 2021-2028, the factor applied to benefits increases by 0.25 each year until it reaches 16.0 percent in 2028. During the period 2005-2019, the average ratio of administrative expenditure to benefits was 15.8 percent for ESSS.

In 2029 and after, administrative expenses are determined by applying to the projected benefits paid the minimum of:

- 1. 16 percent and;
- 2. The ratio of administration expenses to insured earnings of the EI branch projected in the sustainability scenario⁷ of the actuarial valuation of ESSS. The average percentage in the remaining 41-year projection period is 14.3 percent.

A3.5 Pensions in payment in December 2019 - SESSS

There are no permanent disablement pensions, survivors' pension and constant care allowance in payment as of 31 December 2019.

⁷ In this scenario, administrative expenses for the ESSS increase in line with the projected average salary and are allocated as follows: 80 percent of administrative expenditure is allocated by branch according to benefits and the rest (20 percent) is allocated in equal shares between the two branches (this allocation is almost equivalent to an allocation according to insurable earnings).

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Report to the Government Social Security Organization: the first actuarial valuation of the Self-Employed Social Security Scheme as of 31 December 2019

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