Consultores Actuariales, S.R.L.
CONSULTORES ACTUARIALES • PLANES DE PENSION • SOCIO-ECONOMICOS

BELIZE

Social Security Board

Actuarial Valuation of the Social Security Scheme
(As at 31 December 2017)

9 August, 2018

César Nicolás Penson No. 116, Edificio "TPA" • Apartado Postal No. 20021 • Santo Domingo, D. N.
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9 August 2018

Social Security Board
Belmopan, Belize

In accordance with the provisions of Section 45 of the Social Security Act, an actuarial valuation was carried out as of 31 December 2017, to assess the performance of the benefit branches and the adequacy of the statutory contributions to support benefits. The review was based on the legal provisions in force at the valuation date, but due to impending amendments under consideration alternative scenarios of the financial projections of the long-term branch are presented in the report. The analysis also comprises an assessment of the Investment Portfolio, the National Health Insurance Program, the Self-Employed scheme, and the Non-Contributory pension scheme.

A summary of the main findings and recommendations is set out in Chapter I of the report, while Chapter II describes the legal bases and the consolidated financial operations. Chapters III, IV and V present the actuarial analysis of the short-term benefits branch, the employment injury branch, and the long-term branch. Chapters VI evaluates the Investment Performance, as required by the Third Schedule of the Act, and Chapter VII the National Health Insurance Scheme, as required by Part VI of the Act. Annexes show a summary of the legal provisions, statistical and financial data and financing options based on insurable earnings rather than wage-bands.

Attestation

The valuation was carried out according to applicable actuarial cost methods and our interpretation of the provisions in force. Further, the valuation was carried out utilizing actuarial and financial bases and assumptions, which, in our opinion, are reasonable and offer an adequate estimate of the anticipated experience.

Yours sincerely,

For: Consultores Actuariales, SRL

Hernando Pérez Montás

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EXECUTIVE SUMMARY

The actuarial valuation conclusively shows that the legal bases of the social security scheme should be updated urgently to ensure the financial sustainability of the scheme. Total expenditure of the long-term branch is now anticipated to exceed total income in approximately two years, with a decline in consolidated reserves thereafter, based on legal provisions in force. Due to pending legal amendments, the projections of the long-term branch are subject to material variations, as well as the medium term cash flow of the short-term branch and the employment injury branch. Therefore, an integral update of the valuation would be required at 31 December 2018 to assess more accurately the financial and actuarial trend of the benefit branches.

Postponing the implementation of the legal amendments will compromise the financial sustainability of the scheme, resulting in restrictions on funds available for investments, liquidity constraints, curtailment of operational expenses, and potential liquidation of investments when the period of equilibrium is reached. Key amendments include:

i) An internal reallocation of contributions amongst the benefit branches, allocating 65% of contributions to the long-term branch, and 72% when the rate is increased to 10% of insurable earnings, and a restoration of the original formula to compute the pension amount, eliminating the anomalous 5% adjustment.;

ii) An increase in the ceiling of insurable earnings to approximately $500 per week, reducing the gap between actual earnings and pensions to over 40% of insured persons with earnings above the present ceiling of $320 per week. Most employees in the agricultural, construction and trade sectors will not be affected by this amendment;

iii) A 2% increase in the contribution rate from 8% to 10% of insurable earnings, effective as from 1 January 2020, to be entirely allocated to the long-term branch, increasing the share of contributions to the branch to 72%;

iv) Specific amendments to the self-employed scheme, which is already facing actuarial and financial losses, as a result of a deficient set of legal provisions, including the voluntary nature of the scheme conducive to a high level of “adverse selection”;

v) An adjustment to the legal provisions regarding multiple pensions, invalidity benefits and validation of credits.

Therefore, it is imperative that the legal amendments be implemented without delay, as otherwise, more drastic measures will be required concerning the financing bases of the scheme to ensure the financial sustainability of the scheme.

Key Financial Amendments
• Increase ceiling to $500 per week • Delete the upfront 5% pension adjustment • Set a 10% rate as from 2020 • Reallocate the contributions amongst the benefit branches. • Amend provisions of the self-employed scheme

The first set of amendments shown above would ensure the actuarial solvency of the long-term branch for 10 to 12 years. It is also noted that the long-term branch is financed with the lowest rate of contribution of national pension schemes in the CARICOM area, with the gross 4.5% rate depleted by administrative expenses and the cost of non-contributions pensions, reducing the net revenues to cover the rising cost of general pensions to only 2.8% of insurable earnings, including pensions awarded to self-employed persons.

A second set of parametric reforms should be implemented the next decade, to address the ageing of the population of Belize and the increase in the life expectancy, as follows:

i) Updating the eligibility provisions from 10 years to 20 years of contributions to the scheme. Allowing an insured person to qualify for a retirement pension lasting 20 to 25 years with only 10 years of contributions would be conducive to very high actuarial costs in the future. Similar adjustments to the eligibility provisions to qualify for invalidity pensions should also be addressed.

ii) A gradual adjustment to the minimum retirement age, but allowing early retirement with actuarially reduced formulae. At present, a high proportion of retirees are claiming pensions before the nominal age of 65 years, including the self-employed, with the SSB unable to verify the termination of the self-employment status for the latter.

iii) The 2001 elimination of the waiting period for Sickness Benefits has increased the administrative workload as well as the cost of the Short Term Branch. A partial or full restoration of the waiting period will reduce the cost of the branch and align the qualifying conditions with other social security schemes.

iv) The Board should also continue to reduce the number of Non-Contributory pensions by enforcing more stringent valuation procedures, jointly with the required amendments to the eligibility provisions (67 years for females and a 20-year residency requirement to qualify). A reduction in the number of NCP pensions in force to 1,500 persons over three years would have a positive impact in the cost of the long-term branch.

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I

CONCLUSIONS AND RECOMMENDATIONS

1. Consolidated Financial Performance and Medium-Term Expectations

The analysis shows a modest 3.1% increase in contributions in 2017 (3.5% in 2016), which are constrained by a frozen ceiling on insurable earnings, while benefit and operational expenses exceeded contributions, a gap which is covered by investment income. Therefore, the capitalization of the scheme going forward would arise exclusively from a decreasing share of investment income, indicative of a rather high rate of maturity and the need to update the financing bases to ensure the long-term sustainability of the scheme.

Actuarial costs have been increasing at a faster rate, as evidenced by a significant increase in long-term branch benefit expenditure. Until parametric reforms to the financial bases are enacted, the scheme will continue to experience higher current deficits between contributions and expenditure, and a potential reduction in the level of consolidated reserves in approximately two years, resulting in a significant impact on the Fund.

The analysis shows a material increase in the "current deficit" (contributions less expenditure) of $10.6 million in 2017 ($3.5 million in 2016), and a consolidated operational surplus, including investment income, which also declined sharply to $14.3 million ($23.3 million the preceding year).

Consolidated reserves increased to $527 million, but the rate of increase is expected to slow down materially the next two years, and to decline thereafter. Non-implementation of the first tranche of legal amendments will reduce the net income steadily in 2018 and 2019, and yield financial deficits as from the 2020, requiring a liquidation of investments to pay benefits, as shown in the table below.

Estimate of Financial Trends

	2020[p/]	2019[p/]	2018[p/]	2017[a/]	2016
	(Millions of BZ$)				
Contributions	92.0	87.0	84.2	82.6	80.1
Expenditure	(120.0)	(112.0)	(101.0)	(93.2)	(83.6)
Current deficit	(28.0)	(25.0)	(16.8)	(10.6)	(3.5)
Investment income	26.4	25.4	25.0	24.9	26.8
Net income	(1.6)	0.4	10.2	14.3	23.3
Net Assets	536	537	537	527	513

[a/]Unaudited
[p/]Projected

2. Trend of Actuarial Costs

The table below shows an acceleration of actuarial cost the next biennia (2018/19), with a "current deficit" of 1.00% of insurable earnings, which requires an adjustment of the contribution rate to 10% as from 2020.

	Projected	Actual	Expected
	2018/19	2015/17	2015/17
Short-Term Branch	1.80	1.80	1.85
EI Branch	0.90	0.76	1.00
Long-Term Branch [a/]	6.30	5.73	5.40
Total	(9.00)	(8.29)	8.25
Contribution Rate	8.00	8.00	8.00
Surplus (deficit)	(1.00)[b/]	(0.29)	(0.25)

[a/] Include NC Pensions and SE Pensions

[b/] Deficit after 2020 not compensated by investment income, requiring liquidation of reserves to pay benefits, if ceiling contribution rate are not adjusted.

3. Short-Term Branch

The short-term branch operates under the assessment or pay-as-you-go (PAYG) system of finance, as relative costs are expected to remain rather stable over the medium-term. Further, no long-term liabilities are accumulated over time, and a "contingency reserve" is required to cover adverse fluctuations in the experience.

The analysis shows that the transfer of $18 million in reserves to the branch in 2014 restored the funded status of the branch above the minimum level stipulated in the Regulations. However, the share of contribution allocated to the branch does not suffice to cover the cost of benefits and administration expenses of the branch, which causes a gradual reduction in reserves and, ultimately, the need for a further transfer from the employment injury branch medium term, as shown below.

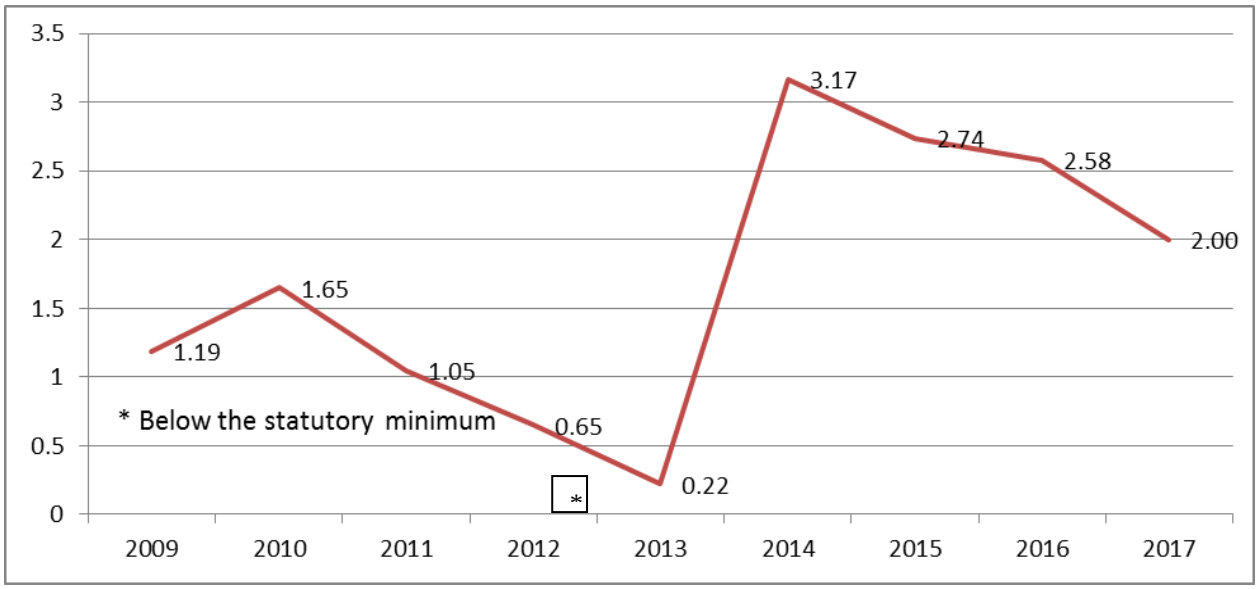
The actuarial valuation shows average actuarial costs, including the share of administrative expenditure, of 1.80% of insurable earnings for the period 2018/19, as compared to the statutory contributions equivalent to 1.54% of insurable earnings (19.25% of contributions). Therefore, increasing the share of contributions to the short-term branch to 1.80% of insurable earnings or 22.5% of contributions (by an equivalent reduction of the allocation to the employment injury branch), would ensure the long-term sustainability of the branch.

Short-Term Branch

Multiple of the Statutory Minimum Level or Reserves

(Six months average benefit expenditure in the preceding 3 years)

Section 17.1 / Financial Regs.

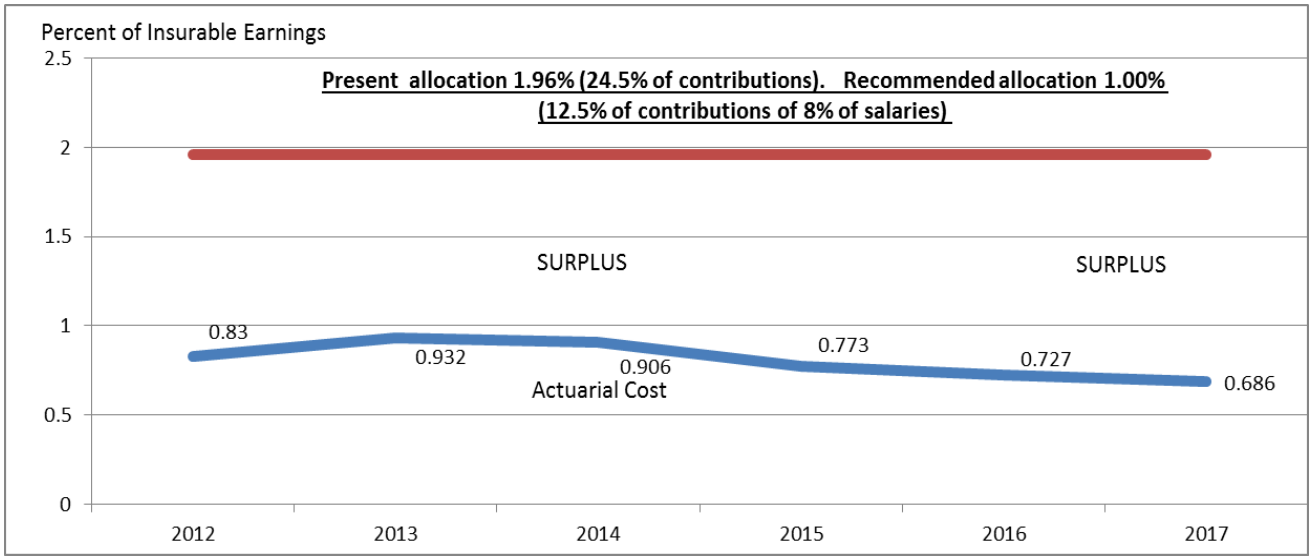


4. Employment Injury Branch

a) Short-Term Benefits

Despite the 2014 transfer of $18 million in excess reserves to restore the funded status of the short-term branch above the minimum level required by the financial regulations, and an additional transfer of $80 million to strengthen the funded status of the long-term branch early in 2016, the reserves of the EI branch continues to exceed the actuarial requirements. Income less expenditure yielded a surplus of $15.8 million in 2017 ($18.6 million in 2016), and the actuarial valuation assesses actuarial costs of 1% of insurable earnings (12.5% of contributions rather than 24.50% of contributions). **Even after the restructuring of the rate of contributions, the reserves are anticipated to continue to increase due to the interest income arising from the investment portfolio assigned to the branch. Therefore, a substantial portion of the reserves should be transferred as from 2020 to the long-term branch, to strengthen its funded status, as well as keeping a safety margin to cover an actuarial deficit in the present value of pensions arising from employment injury.**

EI Branch Actuarial Cost (as % of Insurable Earnings)



b) Disablement and Death Reserves

The valuation shows that the Disablement and Death Reserve of the EI branch of $14.5 million at 31 December 2017 covers 46% the present value of pensions in payment. **New cases and the balance of the reserves are subject to substantial variability.**

c) Consolidated Assessment

The analysis shows a joint surplus of $39.8 million, with a substantial surplus of $56.9 million for short-term benefits and a deficit of $17.1 million in the present value of pensions in payment. It is noted that the reserve for short-term benefits is "a contingency" reserve, while the pension obligations are strictly actuarial reserves.

Consolidated Assessment of the Employment Injury Branch (At 31 December 2017)

	Reserve	Actuarial Liability	Surplus (deficit)
	(Amount in millions of BZ$)		
Short-term benefits	64.343	7.472	56.871
Disablement and death pensions	14.541	31.661	(17.120)
Total	78.884	39,133	39.751

5. Long-Term Branch

- **Actuarial System**

For the long-term branch, the "scaled-premium" system of finance is being applied. Under this system, the contribution rate is fixed at such a level that the income from contributions and investment is expected to exceed the expenditure on benefits and administration for a period of years referred to as the "period of equilibrium".

- **Financial Operations**

The analysis shows a steady increase in benefit expense, yielding a current deficit (contribution less expenditure) of $17.56 million in 2017, a gap covered by 86% of investment income as compared to only 43% in 2015 and 66% in 2016. The 2017 increase in benefits was focused basically on retirement benefits, due to the dual impact of a 5% pension adjustments as from April 2017, and an acceleration in the number of early retirement pensions at ages 60 to 64 years, including the self-employed.

The sharp decline in the actuarial surplus of the long-term branch should be addressed in 2018 by an adjustment of the contribution rate allocated to the branch, an increase in the ceiling on contributions, and restricting the option of self-employed persons to opt for early retirement.

- **Actuarial Projections and Potential Amendments**

Long-term actuarial projections have been carried out, based on legal provisions in force at the valuation date. Scenarios set forth below provide estimates of general amendments initially submitted for consideration by the Board to the CEO, the actuary and the Senior Staff.

Discussions are on-going between the Board and the stakeholders to reconcile alternative amendments submitted for consideration by the Board, before submitting final proposals for approval by the authorities. Once these amendments are enacted, then the actuarial projections would have to be updated at the close of the present fiscal year.

In view of the above, the basic projection at the valuation date (31 December 2017) and the related actuarial parameters are transitory and subject to material adjustments to be updated once the set of legal amendments are enacted by the Minister (Regulations), and the House of Assembly (Act).

- **Summary of the Demographic Projections**

The ratio of pensioners to active insured persons continue to increase, an indicator of the demographic maturity of the long-term branch. **The analysis show that the actual demographic ratios are higher than the ratios projected at the triennial valuation at 31 December 2014 (5.5 vs. 6.0 for retirement pensions, and 9.2 vs. 8.5 for all pensions), due basically to a higher frequency than anticipated of early retirements at 60/62 years of age.** This includes a proportion of former self-employed persons who are able to continue to engage in remunerative work undetected by the SSB, due to the voluntary nature of the self-employed scheme.

- **Summary of the Financial Projections**

Financial projections are subject to a greater degree of variability than demographic projections, due to the sensitivity of financial forecasts to changes in economic assumptions, such as the level of salary trends, inflation and pending legal amendments concerning eligibility and financing provision.

The key indicator derived from the financial projections is the ratio of expenditure derived by the wage base of the active insured persons, or Pay-as-you-go ratio (PAYG). Its comparison with the contribution rate provides a measure of the adequacy of the financing bases of the long-term branch.

Summary of the Financial Projection (Present ceiling)

(Amounts in millions of BZ$) [1/]

Year	PAYG [2/] Ratio	Actual Contribution Rate	Net Deficit
2014	(4.9)	4.5	(0.5)
2017	(5.9)	4.5	(1.4)
2020	(6.5)	4.5	(2.0)
2023	(7.1)	4.5	(2.6)
2030	(8.6)	4.5	(4.1)
2040	(11.8)	4.5	(7.3)
2050	(16.4)	4.5	(11.9)
2060	(23.3)	4.5	(18.8)

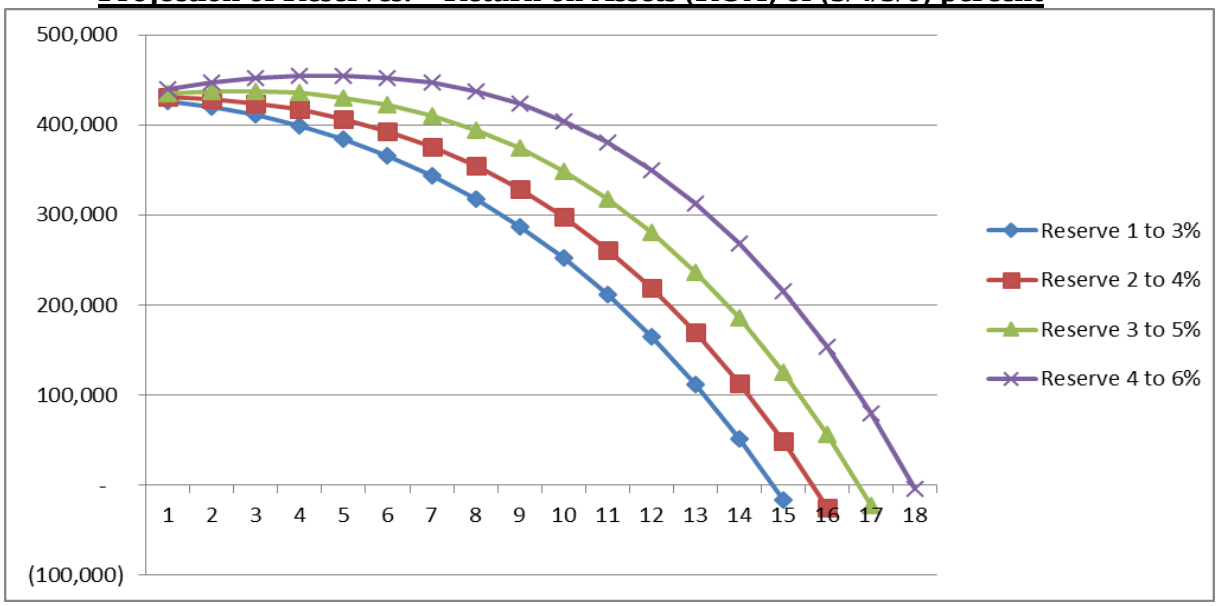
[1/]Excludes investment income

[2/] Ratio of total expenditure ÷ insurable earnings, in percent

- **Projection of Reserves, Periods of Equilibrium and Sensitivities**

A basic projection of actuarial reserves was carried out, with a nominal rate of return on investment of 5% per annum. Sensitivity tests under alternative rates of interest of 3%, 4% and 6% were also carried out. Periods of equilibrium range from only 1 year with a 3% rate of return, to 2.5 years with a 6% rate of return.

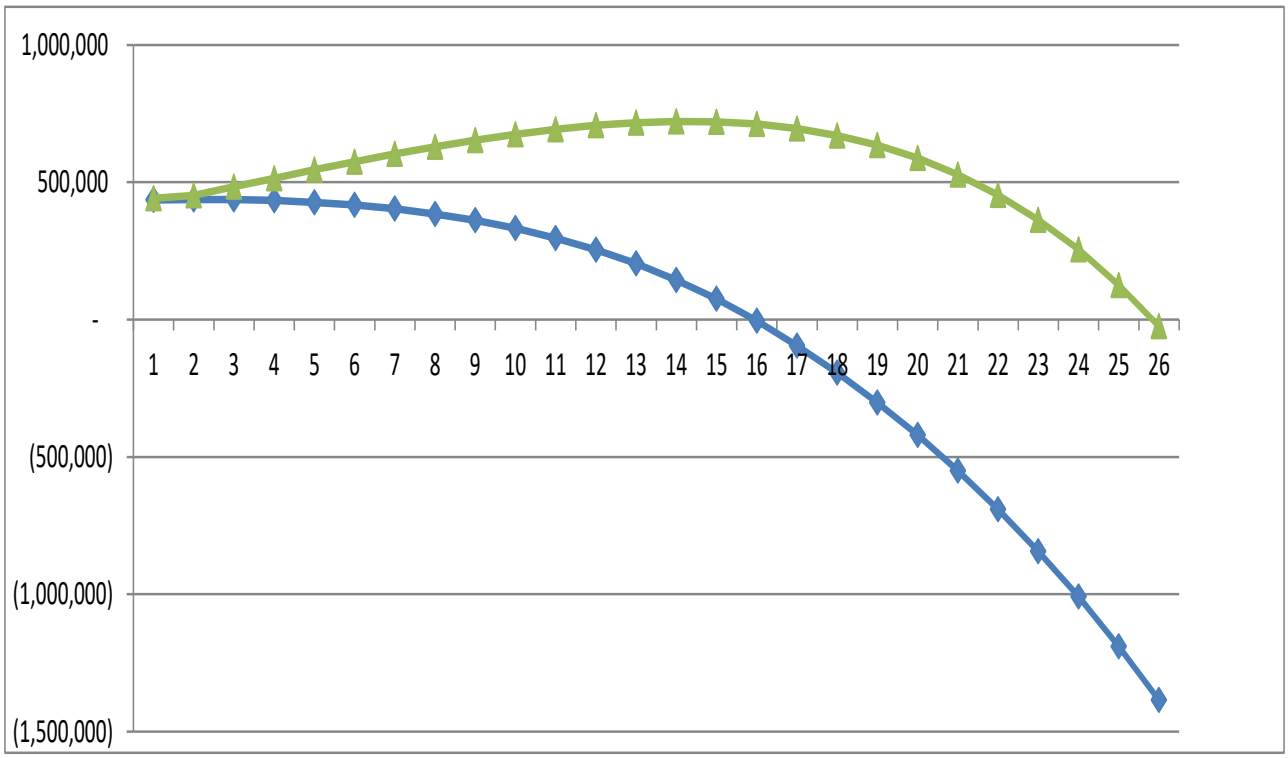
Belize
Long-Term Branch
No Amendment Scenarios
Projection of Reserves. Return on Assets (ROA) of (3/4/5/6) percent



Projection of Reserves:

Blue Line: **No amendments (Period of equilibrium declines in two to three years).**

Green Line: **New ceiling + 10% rate (Period of equilibrium extended by approximately 10 to 12 years.**



- **Adjustment to the Long-Term Financing Bases**

The foregoing analysis show that the present financing structure of the long-term branch should be updated as from 2018, including a re-allocation of the share of contributions to each branch, as otherwise reserves would start declining in approximately two years, resulting in a significant negative impact on the fund.

An increase in the rate of early retirement, a 5% adjustments to pensions and to the minimum pensions in 2016, a 5% adjustment to new pensions as from 2017, the resumption of contribution to the staff pension plan, and salary adjustments, caused a faster increase than previously anticipated in total expenditure of the long-term branch, reducing the period of equilibrium assessed in the preceding actuarial review.

- **Impact on the Period of Equilibrium. Pending Amendments**

The Table shows the impact on the period of equilibrium under specific amendments under consideration. The assessments are based on a nominal rate of return on assets of 5%, with a fluctuation of 1 to 2 years depending on the performance of the investment portfolio.

Scenarios of the Period of Equilibrium (Long-Term Branch)

	Period of Equilibrium
A) No Amendments	2 years
B) Only $500 ceiling as from 1-1-2018	4 years [1/]
C) Option B + 10% Rate as from 1-1-2020	9/11 years [1/]

[1/] Includes reallocation of contributions from 4.5% to 5.2% of insurable earnings as from 1 January 2018, and restoration of the basic pension formula (eliminating the 5% up-front adjustment, plus or minus one or two years depending on the rate of return on investments).

- **Incidence of Proposed Amendments to the Financing Bases**

A. Reallocation of the Contribution Rate

- Ensures the long-term solvency of the short-term branch and guarantees the actuarial solvency of the EI branch.
- Extends moderately the Period of Equilibrium (PE) of the long-term branch.
- Administrative expenditure continues to exceed benchmarks.

B. Increase of the Ceiling to $500 per month

- Improves the **adequacy** of the SSB by reducing the gap between actual earnings and the SSB pensions.
- Extends temporarily the PE by approximately four years, but higher pensions accelerate benefit expenses and offset the gain in the PE.

- Reduces the actuarial cost of administrative expenditure but still at a level in excess of standard benchmarks.
- Does not address the solvency of the long-term branch the next decade, but temporarily promotes deferment of early retirement by insured persons 57 years of age and over.

C. 10% Rate in 2020

- Extend the PE of the long-term branch by about 10 years
- Allows a diversification of the investment portfolio into development projects.
- Has a material incidence in the reduction of the administrative expenditure.

- **Subsequent Events**

After the valuation date, the Chamber and the Unions have submitted preliminary proposals concerning key amendments to the financing bases. The discussions are focused on two key items, namely: the pace of increase of the new ceiling and the 10% adjustments to the contribution rate.

6. Investments

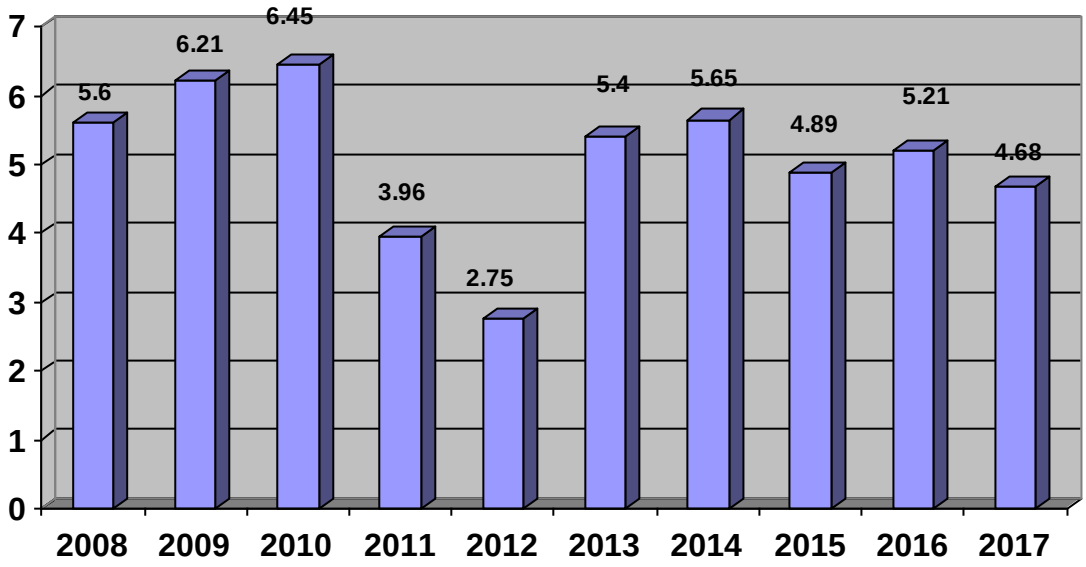
The execution of an investment plan to maximize income without undue risk is a key task of the Board, taking into consideration the advancing maturity of the scheme.

The analysis show that a diversification of the investment portfolio seems advisable, with fresh funds targeted to alternative investments, preceded by: **i) a sound risk/reward assessment, ii) a favorable anticipated risk-adjusted return, and iii) a careful evaluation of the collateral funds, to ensure a full recovery of the unamortized portion of the investment in case of default. Scenarios of risk-adjustment returns are shown in the report.**

The report shows an analysis of the investment portfolio, as required by the Third Schedule of the Act, Section 17, and an Appendix, with a Sectoral Analysis and the feasibility of asset allocation to "development projects". **The attainment of these goals is subject to the implementation of the long overdue set of legal amendments**.

Consolidated Nominal Rates of Return on Investments

(in percent)



7. Self-Employed Scheme

The analysis shows that the performance of the self-employed scheme has been deficient, **due to faulty design, including the voluntary feature of the scheme**, which is conducive to **adverse selection** of individuals with a higher risk for short-term benefits and who can qualify for a minimum age pension with a low number of contributions, negatively impacting the actuarial situation of the SSB, and generating a transfer of funds from employed persons to the self-employed. The matrix of legal amendments should address these issues, **including the exclusion of "housewives" as self-employed; requiring a higher number of self-employed contributions to qualify for pensions, eliminating the window of early retirement and establishing "compliance" standards once they become voluntarily insured.**

The analysis shows that a significant proportion of self-employed persons have been able to qualify for pensions, with conclusive evidence of an intensive level of "adverse selection". Most of the pensioners have opted to claim pensions before the statutory age of 65 years, and therefore the SSB is unable to verify whether the individuals continue to work, in the absence of an employer. Substantial actuarial deficits are emerging, to be subsidized by employers and employees in the general scheme, affecting negatively the financial situation of the long-term branch. The actuarial assessment shows actuarial costs almost twice the statutory contributions of 7% of insurable earnings.

8. Non-Contributory Pension Scheme

The payment of Non-Contributory Pensions (NCP) was transferred from the Ministry of Social Services to the SSB in July 2003.

In December 2007, the Government decided to add eligible males as beneficiaries of NCP and increased the payment to $100 per month, which caused a significant increase in the number of beneficiaries and benefit expenditure.

The total number of NCPs has declined steadily from a peak of 4,934 early in 2008 to 1,844 pensions in payment at December 2017. The mortality of pensioners and more thorough evaluation procedures contributed to offset the abnormal surge of pensions awarded during the initial phase of operations.

Assuming a restricted pace of revaluation of pensions in payment, jointly with a long-delayed adjustment to the ceiling of insurable earnings, the updated long-term trend for 2018/19 shows actuarial costs of 0.18% of insurable earnings. Raising the initial eligibility age to 67 years for females would reduce further the actuarial cost.

The actuary concurs with the recommendation of the NCP Committee to increase to 67 years the minimum entitlement age of females, in accordance with international guidelines, setting the eligibility age two years higher than the SSB normal retirement age; to increase to 20 years the residency requirement for naturalized residents; to allow only one NCP to spouses or persons in the same household, and the non-entitlement to a NCP if the individual has opted for the SSB grant.

II

LEGAL BASES AND CONSOLIDATED FINANCIAL OPERATIONS

1. Legal Bases, Coverage and Benefit Provisions

The social protection system in Belize, as regards cash benefits, is composed of the national social security scheme administered by the Social Security Board (SSB), as a first pillar of pension protection, and the Civil Service Pension scheme and a limited number of complementary pension schemes, as a second pillar. The SSB operates a "defined benefit" and contributory scheme funded on a bipartite basis by employers and employees, whereas the Government system is non-contributory and unfunded, with payments made from current revenues. The remaining complementary schemes are usually funded on a bipartite basis. No individual retirement provisions (IRA) with tax incentives are presently envisaged as a third voluntary pillar of pension protection. The adequate planning of social protection should take into consideration these arrangements for an adequate and sustainable design of the pension system in Belize, although the present report deals exclusively with the national social security scheme administered by the SSB.

The legal bases of the social security scheme are set out in the Social Security Act (1980) and the regulations issued thereunder. The scheme commenced operations on 1 June 1981 and, except for marginal amendments to the benefit regulations, the level of benefits and contributions were not updated until 1 January 2001, when a comprehensive improvement in benefit provisions took place, including a National Health Insurance Scheme, the outdated ceiling on contributions were amended, as described below. On 1 January 2003, a voluntary self-employed scheme was introduced; in May 2003, non-contributory pensions to eligible females were introduced, and on 1 July 2003, the rate of contribution was increased from 7% to 8% of insurable earnings, to strengthen the actuarial situation of the long-term branch. Late in 2007 non-contributory pensions for males as from 67 years of age were introduced and the amount of non-contributory pensions were increased to $100 per month, affecting negatively on the actuarial situation of the long-term branch. Also, a Third Schedule regulating the Investment Framework, as recommended by the Actuary, was annexed to the Act in 2007.

The scheme provides a basic level of social protection, and, after a full career, the scheme is designed to provide a maximum pension of 60% of pensionable salary, which in practice should yield average replacement ratios of 50% to 55% of the last salary, due to salary progression and density of work prior to retirement. However, the minimum pension, increased from $47 per week to $49.35 per week as from April 2016, and represents a rather high percentage of the salary for low income or low-density workers.

The scheme covers all employed persons from 14 to 64 years of age, with specified exceptions such as domestic workers working less than 8 hours per week, persons in the military service and selected officials. Employed persons 65 years and over are covered only against employment injury. A summary of the benefit provisions is shown in Appendix A. Effective 1 January 2009, the distribution of contributions by branch was amended as shown below. A further adjustment is required as from 2015, apportioning to the short-term branch a higher level of contributions, to allow the recapitalization of the branch, and to strengthen the financial bases of the long-term branch.

Further, as from 2009, allocations to the Social Development Fund have been charged to the Employment Injury Branch, but a limit should be stipulated in the Regulations, such as 0.10% of insurable earnings.

2. Pending Legal Amendments

A substantial proportion of the set of legal amendments is still under consideration by the stakeholders. Proposed amendments would address a number of critical provisions dealing with the share of contributions among the benefit branches, the elimination of outdated contributory wage-bands, the provisions regarding eligibility for benefits, the non-duplication of invalidity grants and the self-employed scheme, among others.

Early in 2016, in addition to the transfer of reserves from the EI branch to the long-term branch, pensions in payment were adjusted by 5%, setting a minimum pension of $49.35 per week rather than $47 per week, but an error in the regulations applied also a 5% adjustments to new pensions, a provision that should be corrected as it implies anomalous automatic adjustment to the pension formula.

The amendment allows a surviving spouse to receive, in addition to the retirement benefit earned on her own right, the survivor's benefit payable on the death of the spouse, a rather uncommon feature for pension plans funded on a PAYG basis, wherein the financing of the individual pension would be borne in part by future generations. Before the amendment, only the higher benefit would be payable to the surviving spouse, which is the usual provision of social security schemes funded on a PAYG basis worldwide. The amendment will increase the actuarial cost of the long-term branch, by allowing all age retirees entitled to survivors' pensions to continue to receive both pensions. Further, when both spouses are entitled to a retirement pensions, as the male usually would die before the female spouse, she will be the beneficiary of the joint pensions.

3. National Health Insurance Program

On the basis of recommendations of a National Health Sector Reform Committee, the Government amended the Social Security Act to include a new chapter in order to introduce a National Health Insurance Scheme (NHI). The Act was gazetted on 29 July 2000 but the financing regulations have yet to be implemented. On a transition basis, a focalized program at present is funded exclusively by Government transfers, although managed by the SSB. The program was focalized initially in two geographical areas (Belize City and Southern Belize) and is being expanded to the north of Belize.

4. Financial Bases

Three benefit branches are presently in operation: a Short-Term branch comprising sickness and maternity benefits; a Long-Term branch comprising retirement, invalidity and survivors' benefits, and an Employment Injury branch comprising medical care, temporary employment injury benefits, and grants or pensions in the event of permanent disability or death due to employment injury. Medical care for employment injury was provided only in government installations but as from September 1999, private medical facilities have been integrated into the available options, and at present, most of such care is dispensed by the private sector.

At present, the rate of contributions paid by employers and employees is 8% of insurable earnings (7% for the self-insured), up to a contributory earning ceiling of $320 per week, as follows:

Weekly earnings	Employee	Employer	Total
	(as % of insurable earnings)		
Up to $139.99	1.50%	6.50%	8.00%
$140/320	1.97% to 2.95%	5.63% to 5.02%	8.00%

If the insured person is over 65 years, the employer pays only $2.60 per week only for employment injury benefits, a rate that should be adjusted due to the high cost of medical treatment of elderly insured persons. Investment income is allocated to each branch in proportion to the reserves of each branch at the beginning of the year, whereas other income is distributed equally among the three benefit branches.

The original contribution ceiling of $130 per week has been increased only once, in 2001, when the ceiling was raised to $320 per week, and the skewed original bipartite contribution schedule (6:1 the employer/employee) was reset at one-half each for earnings above $130 per week. However, low-income workers are eligible for a minimum pension of $47 per week and are still paying a minimum contribution of $0.83 per week.

The present ceiling has become obsolete, and the stakeholders should reach an agreement to update the ceiling in order to achieve a better correlation between actual earnings and SSB benefits, including provisions for quasi-automatic adjustments to the ceiling.

The amendments should also include phasing-out in due course the obsolete wage-band system used to assess contributions, instead of payments based on actual earnings, which are easier to manage by enterprises in the formal sector of the economy.

The distribution by branch is as follows, with further adjustments still pending.

5. Actuarial Systems

Table 1

Distribution of Contributions by Benefit Branch

(in percent)

Branch	As from 2020	As from 2018 (recommended)	2009/2017
Short-term	18.0 (1.80)	22.50 (1.80)	19.25(1.54)
Employment injury	10.0 (1.00)	12.50 (1.00)	24.50(1.96)
Long-term	72.0 (7.20)	65.00 (5.20)	56.25(4.50)
Total	100% (10.00)	100% (8.00)	100% (8.00)

[a/] In parenthesis: rates as % of insurable earnings

The short-term branch and the temporary injury benefit of the employment injury branch operate under the "assessment" or pay-as-you-go (PAYG) system of financing, as relative costs are expected to remain within a narrow range for long periods. Any adverse fluctuations or trend would be covered by a "contingency" reserve. The reserve is established in the regulations as the six months average benefit expenditure in the last three years for the short-term branch, and 12 months of the same average for the employment injury branch.

The survivors' and disability pensions of the employment injury branch operate under the "assessment of constituent capitals", under which the present value of pensions awarded is accounted for as the expense in a given year. The "technical" reserve should theoretically be sufficient to meet the actuarial liabilities in respect of pensions in force. This method was recommended in the actuarial valuation carried out prior to the inception of the scheme and should be retained, due to the distinct nature of short-term obligations and long-term disability pensions.

The long-term branch operates under the "scaled-premium" system of finance, which is a partial capitalization system under which the contribution rate should provide for increasing reserves for a given "period of equilibrium". When expenses exceed contribution income and interest, or before reserves fall below the prescribed minimum, the contribution rate should be adjusted to ensure an adequate level of capitalization.

6. Income and Expenditure

Accounting standards and policies are set forth in Section 46 (1) of the Act and the report of the external auditors. Also, investment income is recorded on an accrual basis, and income from associates is accounted for by the equity method.

Table 2 shows the consolidated income and expenditure in the last four financial years, excluding NHI operations.

Table 2
Consolidated Statement of Income and Expenditure (ex-NHI Operations)
(Amounts in thousands of BZ$)

Income	2017	2016	2015
Contributions [1/]	82,611	80,092	77,377
Investment income	23,889	26,208	24,792
Other income [2/]	1,084	615	1,083
Total Income	107,584	106,915	103,252
Benefits			
Short-term branch	15,233	12,843	13,195
Long-term branch [3/]	49,859	45,082	39,687
Employment injury branch	5,410	5,920	6,373
Benefit Expenditure	70,502	63,845	59,255
Administrative and other expenses	22,792	19,739	19,325
Total expenditure	93,294	83,584	78,580
Net income	14,290	23,331	24,672
Contributions less expenditure	(10,683)	(3,492)	(1,203)

[1/] Excludes GOB contribution to the NHI Fund and NHI operations. Unaudited data.
[2/]Includes interest on rental income, staff advances and surcharges for late contributions.
[3/] Includes non-contributory pensions.

7. Other Income

The rate of other income has fluctuated between 0.11% and 0.15% of insurable earnings, including interest on late contributions, and rental income. The income is distributed in equal parts among the three benefit branches, pursuant to the provisions of Section 14(3) of the Financial Regulations. The actuarial rate will be adjusted based on future valuations, if higher compliance by employers tends to reduce the penalties for late contributions.

8. Balance Sheet and Reserves by Branch

Table 3 shows the balance sheet as at 31 December 2017 and the preceding two years.

Table 3
Balance Sheet of the Social Security Board (as at 31 December)
(Amounts in thousands of BZ$)

	2017	2016	2015
Cash and bank balance	30,943	29,345	17,913
Short-term investments	27,272	102,400	118,843
Long-term investments [a/]	428,201	345,144	331,598
Accounts receivable and others	26,114	19,870	12,696
Fixed & other assets (net)	28,043	25,638	26,138
Total assets	540,573	522,397	510,188
Liabilities and deferred income	(13,804)	(9,635)	(8,800)
Net reserves and special funds	526,769	512,762	501,388

[a/]Includes investments in Associates and loans.

The percent distribution of the investment portfolio at 31 December 2017 is as follows:

Table 4
Percent Distribution of the Investment

	2017	2016	2015
Short-term & other	25.1	33.9	29.4
Associates	40.6	29.7	47.2
Long-term	34.3	36.4	23.4
Total	100%	100%	100%

As to the distribution of reserves by branch, Table 5 shows an increase in both Long-term branch and EI branch reserves, the latter exceeding accepted benchmarks, whereas the Disablement and Death reserve has remained relatively stable.

The Short-term branch reserves increased in 2014 due to a transfer of $18 million from the EI Reserves, restoring the balance above the statutory level of the six-month average benefit expenditure in the last three years, required by Section 17(1) of the Financial Regulations).

Table 5
Distribution of Reserves by Branch
(As at 31 December, in thousands of BZ$)

Benefit Branch	2017	2016	2015
Short-term	13,278	16,354	17,029
Long-term	431,200	428,315	348,367
Employment Injury	64,331	49,933	114,517
Disablement and Death	14,546	15,595	16,474
National Health Insurance Fund	2,206	1,960	1,889
Social Security Development Fund	1,502	1,094	2,070
Pension reserve	(294)[a/]	(489)	1,042
Total	**526,769**	512,762	501,388

[a/] As per the actuarial review

9. Reserves as a Percent of GDP

Table 6 shows the consolidated SSB reserves as a percent of GDP, slightly above 14% of GDP (current prices).

Table 6
SSB Reserves as Percent of Gross Domestic Product (GDP)

	2017	2016	2015
	(amounts in millions of BZ$)		
GDP [1/]	3,600[p/]	3,542	3,500
SSB Reserves	527	513	501
As % of GDP	14.6%	14.5%	14.3%

[1/] Current prices.
[p/] Provisional

10. Rate of Return on Investments

As shown in Table 7 the **Rate of Return on Assets (ROA)** has fluctuated significantly, with a triennial average of 4.5% of the real (inflation adjusted) return.

Table 7
Rates of Return on Financial Investments (net assets)
(Amounts in millions of BZ$)

	2017	2016	2015[r/]
Net investment income	23,703	26,208	24,792
Nominal rate of return [1/]	4.66%	5.22%	5.16%
Average inflation rate	1.013%	1.5%	(0.9)%
Real return [2/]	3.33%	4.06%	5.94%

[1/] According to the formula $i = 2I/(R_0 + R_1 - I)$, where I is the return on investments and R the assets at the beginning and at the end of the year, excluding $185,857 in financial expenses.
[2/] According to the formula: $[(1 + i) / (1 + s)] -1$ where i and s represent the interest rate and the inflation rate.
[r/] Restated by the external auditors
Source: Statistical Institute of Belize

Due to the importance of the amount of reserves and of the investment return, it is imperative that a strategy be developed to ensure a prudent investment policy aimed at maximizing a return compatible with the safety of the capital, the latter being the primary consideration. Actuarial projections, in conjunction with expert advice on investments, provide a platform for a long-term investment strategy as from 2017.

11. Integrity of the Reserves and Non-Performing Investments

The Board has strengthened compliance procedures with debtors and it is expected that the risk of potential losses on investment will be reduced gradually. In view of the above, the external auditors have strengthened the status of non-performing investments, to determine any material incidence on the actuarial reserves, yielding a substantial increase in the provision for losses on investment and providing the SSB with a more realistic picture of the financial situation of the scheme.

12. Administrative Expenditure

Administrative expenditure is distributed among the three benefit branches by a weighted share of the sum of contribution income and benefit of the branch as compared to the Fund as a whole. Table 8 shows the trend in administrative expenditure of the basic scheme, with rather stable rates up to 2016, but with an increase in 2017 due to high outlays in legal and severance expenses and “ad hoc” operational assessment related to the strategic plan.

Table 8
Distribution of Administrative Expenditure (amounts in thousands of BZ$)

	2017	2016	2015
Total operating expenditure [1/]	22,791	19,739	18,650
Depreciation (administration)	(964)	(962)	(700)[p/]
Amortization (establishment)	(466)	(482)	(600)[p/]
Net operating expenses	21,361	18,295	17,350
Actuarial cost (total) [2/]	2.20%	1.97%	1.93%
Actuarial cost (net)[3/]	2.06%	1.83%	1.80%
Budget Performance Indicators			
as % of contributions	27.6%	24.6%	24.1%
as % of contributions + benefits	14.8%	13.7%	13.7%

[1/] Excluding NHI expenses
[2/] As percent of insurable earnings
[3/] Excluding depreciation / amortization
[p/] Projection, subject to adjustment

The bottom part of Table 8 shows the performance ratios of administrative expenditure, which are applicable for budgeting purposes, with a decline in the rate of administrative expenditure over the last two years, as compared to contributions and benefits.

The distribution by branch of the total actuarial costs is shown in Table 9.

Table 9
Administrative Expenditure by Branch, as percent of insurable earnings

	2017	2016	2015
Short-term branch	0.47%	0.41%	0.42%
EI branch	0.36%	0.35%	0.35%
Long-term branch	1.37%	1.21%	1.16%
Total	2.20%	1.97%	1.93%

[a/] Includes retroactive salary adjustments and restoration of contributions to the staff pension plan.

When the ceiling on contributions is updated, raising the level of insurable earnings, the relative cost of administrative expenditure should decline, but reaching a competitive level of similar social security schemes in Central America and the Caribbean requires additional cost-curtailment measures. Costs are not comparable, as the Belize scheme operates nine District Offices and five sub-offices, which is not the case in smaller schemes in the Caribbean. The workload arising from the waiver of the waiting period required additional clerical staff in order to process the increase in the number of sickness claims lasting less than three days.

13. Social Development Fund and Disaster Fund

Pursuant to the provisions of statutory instrument No. 60 (1990), 0.15% of insurable earnings of the short-term branch had been assigned to a Social Development Account, reducing the effective financing of short-term branch benefits. As from 2009, the financing of those funds have been transferred to the EI branch, as recommended by the actuary. As at 31 December, the accounts had the following balances:

Table 10

	2017	2016	2015
	(Amounts in thousands of BZ$)		
Social Development Fund	201	43	269
Natural Disaster Fund	1,301	1,051	1,889
Total	1,502	1,094	2,158

14. Trend of NHI Financials

The NHI financial trend is shown in Table 11.

Table 11

	2017	2016
	(Amounts in thousands of BZ$)	
GOB contributions	17,000	17,000
Benefit expenses	(15,823)	(16,141)
Administrative expenditure	(931)	(778)
Surplus	246	81
Reserve	2,206	1,960
In benefit months [a/]	1.67 months	1.76 months

[a/]Minimum desirable reserve: 6 months benefit expenditure

15. Trend of Active Insured Persons and Insurable Earnings

The trend of insurable earnings is shown in Table 12.

Table 12

	2017[p/]	2016 [r/]	2015
Number of insured	104,683	104,011	102,323
Contributions	82,610	80,092	77,377
Insurable earnings	1,032	1,001	967
Average insurable earnings	190	185	182

r/Revised
[p/]Provisional

III

ANALYSIS OF THE SHORT-TERM BENEFIT BRANCH

1. Financial Operations

Table 13 shows the financial operations of the short-term benefit branch. Total expenditure has consistently exceeded total income, with a $3.06 million deficit in 2017, higher in the previous three years due to higher claims for sickness and maternity benefits. Reserves keep declining gradually but still exceeding standard benchmarks due to the transfer of $18 million of reserves from the EI branch in 2014, as shown below.

Table 13
Income and Expenditure of the Short-Term Benefits Branch
(Amounts in Thousands of Belize Dollars)

	2017	2016	2015
Contributions	15,903	15,417	14,895
Investment and other income	1,126	1,106	1,312
Total Income	17,029	16,523	16,207
Maternity allowances	3,604	3,268	3,616
Sickness benefits	10,657	8,620	8,575
Maternity grants	971	955	1,004
Total Benefits	15,233	12,843	13,195
Operational expenses	4,854	4,094	4,184
Total Expenditure	20,086	16,937	17,379
Income less Expenditure	(3,057)	(0.414)	(1,172)
Contingency Reserve	13,278	16,354	17,029

[a/] Includes transfer of $18 million from the EI reserves. Otherwise, the balance would have been negative.

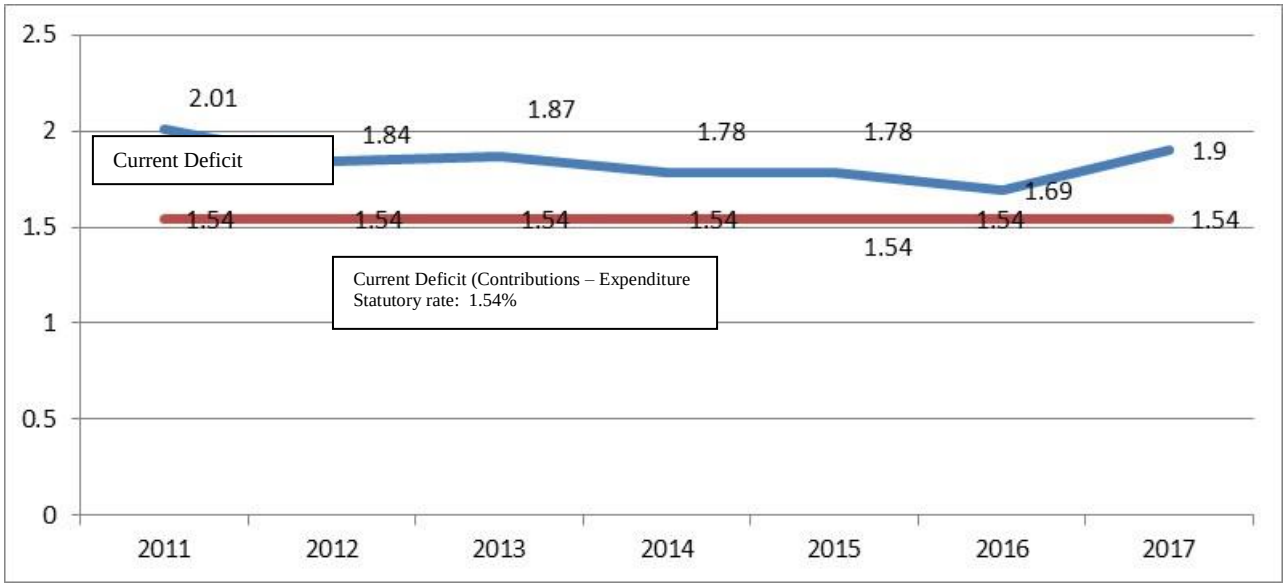
2. Income and Expenditure as a Percent of Insurable Earnings

Income and expenditure as a percentage of insurable earnings is shown in Table 14. Total cost (benefit and administrative expenditure) exceeds the contribution rate allocated to the branch. Investment income contributed to reduce the deficit, but as reserves have been declining, investment income also declined. The deficit increased to 0.263% of insurable earnings in 2017, (0.042% in 2016).

Table 14
Income and Expenditure of the Short-Term Branch as a Percent of Insurable Earnings

	2017	2016	2015
Contributions	1.540	1.540	1.540
Investment & other income	0.110	0.110	0.131
Total Income	1.650	1.650	1.671
Maternity allowances	0.346	0.326	0.364
Sickness benefits	1.007	0.861	0.896
Maternity grants	0.094	0.096	0.104
Total Benefits	1.447	1.283	1.364
Operating expenses	0.465	0.409	0.419
Total Expenditure	1.914	1.692	1.783
Income less Expenditure	(0.263)	(0.042)	(0.112)

Actuarial Cost of the Short-Term Branch
(% of insurable earnings)



3. Cost and Fund Ratios

Section 17 (1) of the Financial Regulations set a minimum level of reserves equivalent to six months the average benefit expenditure in the last three years. As shown in Table 15, at the end of 2017 the reserve stands above the minimum stipulated in the regulations, but declining steadily, projected to fall again below the minimum in a few years.

Table 15
Statutory Minimum Level of Reserves (31 December)

	2017	2016	2015
	(amounts in thousands of BZ$)		
Minimum statutory reserve [1/]	6,878	6,338	6,120
Actuarial reserve [2/]	13,278	16,354	17,029
Reserve ratio (actual / minimum)	1.93	2.58	2.78

[1/] Six months average benefit expenditure in the last three years.
[2/]Includes a $15 million transfer from the EI reserves in 2009 and $18 million in 2014.

Table 16 shows the cost and funding ratios of the short-term branch, with all cost ratios increasing in 2017, the following summary:

a) **The ratio of benefits divided by contributions,** an 86% average in the last three years.

b) **The Cost Ratios (expenditure divided by contributions and total income) are higher than one, meaning sustainable "current deficits".** Even including investment income still yields sustainable deficits.

c) The Fund Ratio shows a steady decline, and at 31 December 2017 was equivalent to 0.69 or 8.28-month expenditure, slightly above the international accepted minimum of six months' total expenditure.

d) The transfer of reserves in 2014 restored the reserve position above the minimum state in the regulations, but in the absence of an increase to the share of contributions, the reserves will start declining gradually and fall again below the statutory minimum medium term.

Table 16
Cost and Fund Ratios of the Short-Term Branch

	2017	2016	2015
Benefits ÷ contributions	0.93	0.83	0.89
Total expenditure ÷ contributions	1.24	1.10	1.16
Total expenditure ÷ total income	1.16	1.02	1.07
Fund Ratio [a/]	0.69	0.97	0.99

[a/]Reserve ÷ total expenditure in the year

4. Frequency and Unit Cost of Sickness Benefit

The analysis for the period under review shows (Table 17):

a) An average duration of terminated sickness cases of 7.4 days, higher than in 2016.

b) Average “morbidity rates” (days paid per insured per year) of 3.60 days, with a moderate rising trend.

c) **Morbidity rates for females significantly higher than for males**, a variation that deserves an in-depth analysis by the research section, to determine causalities and introduce cost reduction strategies.

d) An average duration per new cases in a calendar year of 8.88 days, average days per insured in a calendar year (in 2016) of 3.36 days.

Table 17
Sickness Incidence of Terminate Cases

	2017	2016	2015
Insured Population	Exposed to Risk (Active Insured)		
Males	64,265	63,667	63,547
Females	40,418	39,584	38,618
Total Active Insured	104,683	103,251	102,165
Terminated Cases			
Cases	4,671	3,777	3,658
Days paid	34,565	17,572*	23,525
Average duration (days)	7.40	4.65	6.44
New Cases			
New cases	39,546	30,926	30,929
Days paid	351,391	268,421	289,466

*Abnormal variation

Table 18

Sex Differentials of Sickness Claims (New Cases / 2017)

Granted New Cases	Males	Females	Total
No. of Cases	20,745	18,801	39,546
No. of Days	182,694	168,697	351,391
Active Insured	64,265	40,418	104,683
Average days per case	8.81	8.97	8.88
Average cases per insured	0.32	0.46	0.38
Average days per insured [a/]	2.84	4.17	3.36
Total days granted (… terminated)	198,960	18,996	385,956
Adjusted factor for old cases	1.09	1.4	1.10

[a/]Morbidity rate

5. Actuarial Cost of Sickness Benefit

Table 18 shows the actual and projected actuarial cost of sickness benefits of 1.01% in 2017 (0.86% in 2016).

Table 19

Average	Actual			Actual	Projected	Percent Variation
	2017	2016	2015	(2015/17)	2015/17	Actual vs. Expected
Cases per 100 insured	0.38	0.30	0.31	0.33	0.30	10.0
Days per insured (Morbidity rate)	3.36	2.70	2.85	2.97	3.05	(2.6)
Cost per case	$263	$278	$277	$273	$2.72	0
Cost per day	$29	$31	$29	$30	$27	11.1
Cost per insured	$99	$83	$88	$93	$84	7.1
Actuarial cost[a/]	1.01%	0.86%	0.89%	0.88%	0.90%[a/]	2.2%

[a/]As percent of insurable earning.

6. Trend of Maternity Benefits

The rates of maternity allowances were stable in 2017, as well as the frequency of maternity grants, as shown in Table 20.

Table 20
Actuarial Cost of Maternity Benefits

	2017	2016	2015
Active contributors	104,683	103,251	102,165
Female contributors	40,418	39,584	38,615
Number of allowances paid	1,341	1,271	1,285
Number of grants paid	3,195	3,168	3,329
Allowance paid per 100 females	3.32	3.21	3.59
Grants paid per 100 females	7.90	8.20	9.09
Allowances by 100 average contributors	1.28	1.25	1.31
Grants per 100 average contributors	2.09	3.10	3.41

7. Actuarial Cost of Maternity Benefits and Grants

The cost of maternity allowances and grants has remained rather stable in the last three years, (Table 21). For the period 2015/17, the average cost was assessed at 0.50% of insurable earnings, while the actual rate of 0.45% is slightly lower.

Table 21
Actuarial Cost of Maternity Benefit

				Expected	Actual
	2017	2016	2015	2015/17	(2015/17)
Actuarial cost (allowances)	0.35%	0.33%	0.36%	0.38%	0.35%
Actuarial cost (grants)	0.09%	0.10%	0.11%	0.12%	0.10%
Total	0.44%	0.43%	0.47%	0.50%	0.45%

The statistical data shows that the fertility rate has started to decline moderately in Belize, and the age-structure of the population over 15 years is changing gradually, a trend which is also influenced by migration, with an estimate of 10% of the population over 60 years of age, as compared to 8% in 2002, a ratio that will be monitored periodically.

The sequential experience is shown in Table 22, showing a steady reduction of the actuarial cost due to lower fertility rates:

Table 22

Year	Allowances as % of Insurable earnings	Total
2015/17	0.35	0.45
2012/14	0.38	0.46
2009/11	0.43	0.56

8. Actual versus Expected Experience and Projected Actuarial Cost

Table 22 shows a comparison between the actual and expected actuarial cost of the short-term branch benefits, with average total cost in 2017 of 1.80% of insurable earnings, close to the 1.85% estimated. The actuarial cost estimate for 2017/19 is assessed at 1.80% assuming static morbidity rates and fertility rates. No significant reductions should be expected until the ceiling of insurable earnings is updated, or until the former benefit, provisions are restored on a partial basis. **The actuarial cost is higher than the present statutory allocation of 1.54% of insurable earnings (or 19.25% of contributions), which is insufficient to keep the actuarial solvency of the branch on a long-term basis.**

Table 23
Comparison between Actual and Expected Actuarial Cost of Benefits
(As % of insurable earnings)

	Projected 2018/19	Actual 2015/17	Projected (2015/17)
Sickness allowance	0.90	0.92	0.90
Maternity allowance	0.35	0.35	0.38
Maternity grant	0.10	0.10	0.12
Total benefits	1.35	1.37	1.40
Administrative expenses	0.45	0.43	0.45
Total	1.80%	1.80	1.85

10. Amendments to the Short-Term Branch (as from 2020)

a) Elimination of the Waiting Period

Statistics on sickness claims show that approximately 45% of the total lasted from one to three days, accounting for 13.6% of the total days paid and 14.4% of the amounts paid. Therefore, the elimination of the 3-day waiting period in the legal amendments enacted in 2001 have almost doubled the number of claims processed, generating a significant increase in the administrative workload, while increasing the

SSB cost of sickness benefits. **A restoration of a waiting period will have no material incidence in the direct cost to employers, but it will reduce the SSB administrative cost.** A partial restoration of 2-days (lower than the usual 3-days in many CARICOM schemes) would be advisable as from 2020.

The morbidity rate (days paid per insured) should decrease by 25%, due to a high incidence of cases in the agricultural sector, usually prior to the conclusion of the harvesting season. **The high replacement ratio of 80% of the average insurable earnings, as compared to 60% to 70% in other schemes, also contributes to the high incidence and duration of sickness cases, particularly if the beneficiary is able to work in the informal sector as a self-employed without being detected by the SSB.**

The restoration of a waiting period and a benefit rate of 70% rather than 80% for sickness and maternity benefits would align the SSB legal provisions with other schemes, and reduce further the cost of the Short-Term branch. A restoration of the waiting period in 2022/23 would also contribute to reduce the workload involved in processing the number of claims and the cost of administration.

b) Incidence of Amendments to the Sickness Provisions

The application of the waiting period and a level replacement rate of 70% rather than 80% would reduce the actuarial cost is shown in Table 24.

Table 24

Alternative Cost of the Short Term Branch

	Percent of Insurable Earnings
Actuarial cost, present legal provisions	1.80[a/]
With a 2-days waiting period and a 70% rate	1.70
With a 3-days waiting period and a 70% rate	1.60

[a/] 22.5% of contributions, declining to 18% with a 10% rate of contributions as from 2020.

IV
ANALYSIS OF THE EMPLOYMENT INJURY BRANCH

1. Financial Operations of the Employment Injury Branch

Table 25 shows the operations of the employment injury branch, which records as expenses the actuarial present value of disablement and survivor' pensions, in accordance with the actuarial method of "terminal reserves" or "assessment of constituent capital" applied to the scheme. The transfer of $80 million in 2016 to the long-term branch reduced the reserve to $49.9 million at 31 December 2016, but increased again to $64.3 million at 31 December 2017 due to the excessive contribution rate earmarked to the branch.

Table 25
Income and Expenditure of the Employment Injury Branch
(Amounts in thousands of BZ$ Dollars)

	2017	2016	2015
Contributions	20,240	19,623	18,958
Investment and other income	2,699	6,264	5,561
Total Income	22,939	25,887	24,519
Disablement grants	518	551	496
Employment injury (short-term)	2,468	2,569	2,322
Disablement benefits (actuarial value)	109	666	722
Death benefits (actuarial value)	212	25	543
Funeral grants	2	2	5
Total Benefits	3,309	3,813	4,088
Operating expenses	3,770	3,464	3,531
Total Expenditure	7,078	7,278	7,619
Income less Expenditure	15,860	18,609	16,900
Net Reserve (Short-term benefits)	64,330	49,933[a/]	112,738

[a/] Net of the $80 million transferred to the long-term branch in April 2016.

2. Income and Expenditure as a Percent of Insurable Earnings

Income and expenditure as a percentage of insurable earnings are shown in table 26. Total benefits in 2017 were equivalent to 0.36% of insurable earnings or (0.35% in 2016), yielding a substantial surplus, which confirms that the financing of the branch exceeds actuarial requirements.

Table 26

Income and Expenditure as a Percent of Insurable Earnings (EI Branch)

	2017	2016	2015
Contributions	1.960	1.960	1.960
Investment and other income	0.262	0.626	0.552
Total Income	2.222	2,586	2.512
Disablement grants	0.050	0.055	0.051
Employment injury (short-term)	0.240	0.256	0.240
Disablement benefits (actuarial value)	0.011	0.067	0.075
Death benefits (actuarial value)	0.020	0.003	0.056
Funeral grants	0.000	0.000	0.000
Total Benefits	0.321	0.381	0.422
Operating expenses	0.365	0.346	0.351
Total Expenditure	0.686	0.727	0.773
Income less Expenditure	1.274	1.859	1.739

3 Statutory and Actual Reserves

Reserves of employment injury benefits have evolved as shown in table 27. The minimum short-term reserve of the branch, as provided for in Section 17(2) of the Financial Regulations, should be equivalent to the average benefit expenditure in the preceding three years. **Therefore, at year-end the reserve is 17.2 times higher than the stipulated minimum, a clear indication that the contribution rate assigned to the branch exceeds the actuarial requirements.**

Table 27
Employment Injury Benefits Reserves
(Amounts in thousands of BZ$)

31 December	Reserve	Statutory Minimum	Multiple Minimum Reserve
2017	64,330	3,736	17.2
2016	49,933[a/]	4,183	11.9
2015	112,738	4,322	26.1
2014	99,003	4,055	24.1

[a/]Impact of $80 million transferred to the long-term branch

4. Incidence of Short-Term Injury Benefits

Table 28 shows the incidence and cost ratios of employment injury benefit.

Table 28
Incidence of Employment Injury Short-Term Benefit)

	2017	2016	2015
Cases paid	1,781	1,842	1,922
Amount paid ($ thousands)	2,467	2,569	2,322
Average insured persons	104,347	102,700	100,002
Cases per 100 insured	1.71	1.79	1.92
Cost per case ($)	1,385	1,395	1,200
Cost per insured ($)	23.64	25.01	23.22
Actuarial cost (% of salaries)	0.240	0.256	0.240

The emerging trend shows that the anticipated incidence has been slightly lower to the actuarial expectations, as from in Table 29. For the next two years, the same estimate is retained**.**

Table 29
Actual and Expected Cost of Injury Benefits [a/]

	Projected	Projected	Actual
	2018/19	2015/17	
Cases per 100 insured	1.00	2.00	1.81
Actuarial cost (% of salaries)[a/]	0.30%	0.30%	0.27%

[a/]Excludes medical expenses

5. Financial Trend of the Disablement & Death Benefits

The sub-branch operates based on the actuarial funding method of "assessment of constituent capitals" or terminal reserves. Each year the actuarial present value (APV) of the cases occurring during the year is credited to the reserve of the sub-branch, jointly with the investment income earned by the reserve. The updated cumulative reserve should be sufficient to cover the cost of pensions in payment at the close of the year.

Table 30 shows the income, expenditure, reserve and the Fund Ratio of the Disablement and Death benefits. The Disablement and Death Reserve, is of a different nature, representing the amounts required to pay pensions in payment until cessation of payment due to death, recovery or termination of survivors' benefits, while the short-term branch contingency reserve is designed to cover adverse deviations in the experience.

Table 30

Income, Expenditure and Reserves of Disablement & Death Benefits

	2017	2016	2015
APV disablement benefits	108,717	665,902	722,083
APV death benefits	211,772	25,139	543,257
Total APV	320,489	691,041	1,265,340
Net investment income	727,152	867,671	829,691
Total income	1,047,641	1,558,712	2,095,031
Expenditure			
Disablement pension	1,453,450	1,442,446	1,356,722
Death benefits	647,438	664,098	732,648
Total benefits	2,100,888	2,106,544	2,089,370
Excess of income over expenditures	(1,053,247)	(547,832)	5,660
Actuarial Reserve	14,541,268	15,594,510	16,474,646
		Key Indicators	
Actuarial cost (new cases) [a/]	0.03%	0.07%	0.13%
Reserve ÷ benefit expenditure (Fund Ratio)	6.92	7.38	8.02

[a/] APV of new cases ÷ insurable earnings

6. Incidence of Disablement and Death Benefits

Table 31 shows the rates of accidents per 1000 insured persons due to EI accidents. The incidence of accidents declined in 2017, according to preliminary data, but the cases of permanent incapacity rose.

Table 31

Number of Accidents by Consequence and Rates per 1000 insured

	Number of Cases			Rates for 1000 insured		
Year	Medical Care only	Permanent incapacity	Deaths	Medical care only	Permanent incapacity	Death
2017	1,781	165	12	17.1	1.59	0.12
2016	1,842	132	1	17.9	1.29	0.01
2015	1,922	127	3	19.2	1.27	0.04
Average 2015/17	1,781	165	12	17.1	1.59	0.12

7. Trend of Pensions in Payment

The statistics shown in Table 32 indicate a gradual increase of pensions in payment.

Table 32
EI Pensions in Course of Payment

	2017	2016	2015
Disablement Pensions			
Number	471	469	465
Monthly amount	$113,378	$110,963	$105,217
Widows			
Number	86	84	87
Monthly amount	$32,180	$30,671	$31,020
Orphans			
Number	170	181	191
Monthly amount	$27,461	$27,461	$28,882

9. Medical Expenses

Medical expenses are budgeted as a separate item but are shown on a consolidated basis with employment injury benefits in the financial statements, as noted above. **It is recommended that the financial statements show injury cash benefits and medical expenses separately.**

10. Expected Cost of the EI Branch

The triennial actuarial valuation at 31 December 2014 estimated total costs of 1% of insurable earnings for the period 2015/17. The actual experience was lower, 0.76% of insured earnings less than one-half the present allocation to the branch, or 0.90% of insurable earnings.

Table 33
Actuarial Cost of the EI Branch
(As % of insurable earnings)

Benefit	2018/19	2015/17	
	Projected	(Actual)	(Expected)
Employment Injury	0.30	0.27	0.35%
Disablement & Death Benefits (APV)	0.14	0.13	0.21
Death and Funeral Grants	0.01	0.01	0.01
Total Benefits	0.45	0.41	0.60
Administrative Expenditure	0.40	0.35	0.40
Total	6.10%	0.76%	1.00%

[a/] Projected at the 31 December 2014 triennial valuation.

11. Funded Status of the Disablement and Death Reserve

A direct analysis of the level of sufficiency of the Disablement and Death Reserve was performed at 31 December 2017. The calculations were carried out according to the following bases.

Mortality Table: GAM-83

Mortality of Disabled Lives: $a_x + 4$ (x = age).

Remarriage Rates (Widows): Non-material. Reduction factor (widows): 0.90 (remarriage and contingent suspension at age 50).

Basic Discount Rate: 4% (ad hoc pension adjustments)

Actuarial Reserve: $14.5 million (at 31 December 2017)

The present value of EI pensions in payment and the Fund Ratio was assessed at **$31,661,000**, a**ssuming life pensions rather than conversion into age pensions at age 60.**

Table 34
Funded Status of the EI/Disablement & Death Reserve
(at 31 December)
(Amounts in millions of BZ$)

	2017	2016
Present value of pensions in payments	31.661	30.661
Reserve	(14.541)	(15.595)
Net Liability	17.120	15.066

Due to the substantial surplus of the EI branch, the difference can be met by an internal transfer within the branch, although due to the fluctuation of the incidence of EI disability and death, and the long-term time frame involved, such a transfer is not required at present.

Table 34 shows a consolidated assessment of the EI branch. The surplus reserves of short-term benefits, assessed at 11.9 times the statutory minimum, compensates the deficit of the Disablement and Death Obligations, still yielding a consolidated surplus of $28.593 million at 31 December 2016.

Table 35
Consolidated Assessment of the Employment Injury Brand
(at 31 December 2017)

	Reserve	Actuarial Liabilities	Surplus (Deficit)
	(amounts in millions of BZ$)		
Short-term benefits	64.330	7.472	56.858
Disablement death benefits	14.546	31.661	(17.115)
Total	78.876	39.133	39.743

13. Reallocation of the Contribution Rate

The recommended allocation of 1% of insurable earnings to the branch, rather than 1.96%, covers anticipated actuarial cost of the EI branch until the next triennial actuarial valuation, but reserves should continue to increase due to the material incidence of investment income. Therefore, even with a reduced allocation of contributions, equivalent to almost one-half the present statutory allocation, the substantial reserve of the EI branch will continue to increase in the future, and a subsequent transfer to the EI branch might be warranted.

14. Update of the EI Degree of Disablement Schedule

The Second Schedule of the Benefit Regulation 43 should be updated by the SSB. For example, Item 15 (loss of one thumb) stipulates a 30% degree of disablement, allowing the insured person to a minimum life pension of $47 per week, **and to continue in active employment.** However, Item 25 (loss of all toes of both feet) stipulates a 20 degree of disablement, allowing the insured person to only a lump-sum grant. For an insured person with average earnings of $55 per week, the minimum pension would be equivalent to 85% of the salary.

Measures are being implemented to avoid the payment of disablement pensions to individuals who return to work as self-employed, thus avoiding detection by the SSB compliance services.

V

ACTUARIAL ANALYSIS OF THE LONG-TERM BRANCH

1. Actuarial System

For the long-term branch, the "scaled-premium" system of finance is being applied. Under this system, the contribution rate is fixed at such a level that the income from contributions and investment is expected to exceed the expenditure on benefits and administration for a period of years referred to as the "period of equilibrium". Throughout the period of equilibrium, the annual excess of income over expenditure is accumulated in a reserve that increases steadily, but declines thereafter if there are no adjustments to the contribution rate. A primary objective of the actuarial review is to ascertain the adequacy of the statutory contribution rate in accordance with the system of finance, and to quantify the projected level of reserves derived from the financial development of the branch.

2. Financial Operations

The comparative data in Table 36 shows the trend of benefit and administrative expenditure in the period under review. The analysis shows a steady increase in benefit expense, yielding a current deficit (contribution less expenditure) of $17.56 million in 2017, a gap covered by 86% of investment income as compared to only 42% in 2015.

The 2017 increase in benefits was focused basically on retirement benefits, due to the dual impact of a 5% pension adjustments as from April 2016, and an acceleration in the number of early retirement pensions at ages 60 to 64 years, including the self-employed.

The sharp decline in the actuarial surplus of the long-term branch should be addressed in 2018 by an adjustment of the contribution rate allocated to the branch, an increase in the ceiling on contributions, restrictions the option of self-insured persons to opt for early retirement, and a 2% increase in the rate of contributions effective as from 1 January 2020.

When the surplus decreases to zero (period of equilibrium), branch reserves would start to decrease unless an adjustment to the contribution rate restores a positive operational balance and reserves continue to increase.

Table 36
Income and Expenditure of the Long-Term Branch
(Amounts in thousands of Belize Dollars)

	2017	2016	2015[r/]
Contributions	46,468	45,052	43,525
Investment and other income	20,417	18,584	18,135
Total Income	66,885	63,636	61,660
Retirement benefits	35,453	31,085	26,608
Invalidity benefits	3,588	3,449	3,509
Survivors' benefits	7,160	6,782	5,597
Funeral Grants	1,361	1,262	1,219
Non-contributory pensions	2,297	2,505	2,754
Total Benefits	49,859	45,083	39,687
Operating Expenses	14,164	12,179	11,609
Total Expenditure	64,023	57,262	51,296
Contributions less expenditure (current deficit)	(17,560)	(12,210)	(7,771)
Income less Expenditure	2,862	6,374	10,363
Actuarial Reserve	431,199	428,315[2/]	341,941
Fund Ratio [1/]	6.7	7.5[2/]	6.8

[1/] Reserves ÷ total expenditure
[2/]Increase due to the transfer of $80 million from the EI reserve.

3. Income and Expenditure as a Percent of Insurable Earnings

Table 37 shows the financial experience as a percent of insurable earnings. Total benefits rose to 4.82% of insurable earnings, and total expenditure to 6.19% of insurable earnings, higher than the 4.5% rate allocated to the branch. The "current deficit" (contributions less expenditure) has been increasing steadily, a trend that should continue in 2018/19 unless a higher share of contributions is allocated to the branch and the ceiling is adjusted.

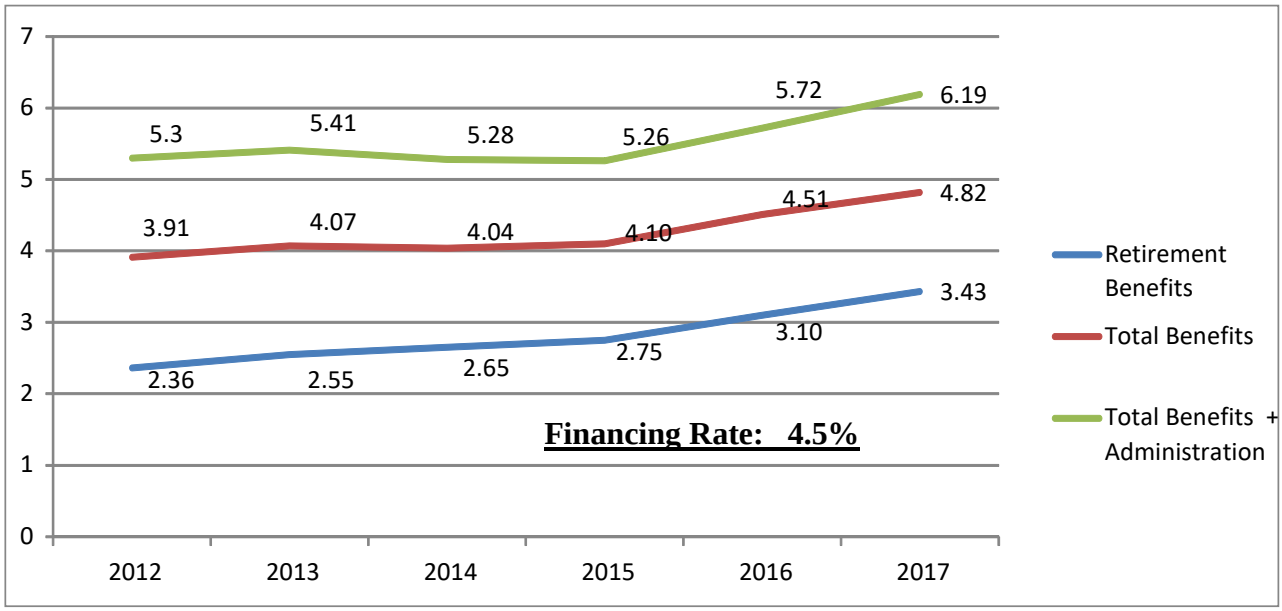
Table 37
Income and Expenditure as a Percent of Insurable Earnings

	2017	2016	2015
Contributions	4.50	4.50	4.50
Investment & other income	1.97	1.86	1.80
Total Income	6.47	6.36	6.30
Retirement benefits	3.43	3.10	2.75
Invalidity benefits	0.35	0.35	0.36
Survivors' benefits	0.69	0.68	0.58
Funeral Grants	0.13	0.13	0.13
Non-contributory pensions	0.22	0.25	0.28
Total Benefits	4.82	4.51	4.10
Operating Expenses	1.37	1.21	1.16
Total Expenditure	6.19	5.72	5.26
Income less Expenditure	0.28	0.64	1.04
Current Surplus (deficit)[a/]	(1.69)	(1.22)	(0.76)

[a/] Contributions less expenditure

Long-Term Branch

Income & Expenditure (% of insurable earnings)



4. Trend of Pensions in Payment

Table 38 shows the trend of pensions in payment, with a steady increase in all the categories of pensioners, a normal trend reflecting the gradual demographic maturity of the long-term branch.

Table 38
Number of Pensions in Payment (year-end)

	Retirement	Invalidity[a/]	Widows/ers	Orphans	Total Pensions	Rate of Increase (%)
2012	4,214	346	1,063	1,250	6,813	7.1
2013	4,532	339	1,090	1,212	7,211	5.8
2014	4,855	358	1,175	1,297	7,685	6.6
2015	5,287	353	1,216	1,380	8,236	7.2
2016	5,799	376	1,331	1,471	8,967	8.8
2017	6,322	380	1,386	1,544	9,632	7.4

[a/] Pensions transferred to the category of retirement pensions at age 60.

The low rate of increase in the number of invalidity and orphans' pensions is due, in the first instance, to high termination rates due to the transfer of invalidity persons to retirement pensions as from 60 years of age, and also due to terminations, as many pensioners resume work and the pension is then suspended, or by reaching the maximum qualifying age in the case of orphans.

5. Invalidity Pensions and Grants

Tables 39 and 40 show the incidence of invalidity pensions awarded and of invalidity grants.

Table 39

Number and Frequency of Invalidity Pensions Awarded

	Number awarded	Incidence Rate (per thousand)
2017	57	0.54
2016	69	0.68
2015	56	0.56
2014	52	0.56

Table 40

Invalidity Grants Paid

	Number	Rate per 1,000 insured
2017	49	0.47
2016	38	0.37
2015	57	0.57
2014	41	0.42

6. Trend of Demographic Ratios

Table 41 shows the trend of demographic ratios. The higher rate of increase took place for retirement pensions, with 6.08 pensioners per 100 active contributors in 2017. The consolidated ratio increased to 9.26 at 31 December 2017.

Table 41

Trend of Demographic Ratios

(At 31 December)

	2017	2016	2015	2014
Demographic Ratios (Pensioners ÷ active contributors, in %)				
Retirement [a/]	6.08	5.62	5.21	4.96
Invalidity [b]	0.37	0.37	0.35	0.37
Survivors [c/]	2.81	2.71	2.44	2.53
Total (actual)	9.26	8.70	8.00	7.86

[a/] Excludes NC pensions
[b/] Pension transferred to old-age category at age 60
[c/] Includes orphans

7. Distribution of Statutory Contributions

The gross share of contributions allocated to the long-term branch is equivalent to 4.50% of insurable earnings as from 1 July 2003. Deducting the estimated costs of grants, the non-contributory scheme, and administrative and other expenditures, yields an updated net rate of 2.84%, as shown in Table 42.

Table 42
Distribution of the Statutory Contribution Rate of 4.50% of Insurable Earnings (56.25% of contributions)
(Excluding investment income)

	2018/19	2014/17
Gross rate	4.50	4.50
Other income	0.02	0.04
Total contributions	4.52	4.54
Administrative expenditure [b/]	(1.30)	(1.23)
Grants [a/]	(0.20)	(0.20)
Non-contributory pensions	(0.18)	(0.34)
Net rate for contributory pension benefits	2.84%[b/]	2.77%

[a/]Includes all grants
[b/]Subject to adjustment once the ceiling and the 10% rate are enacted.

8. Macro-Economic Trends

After a stagnant period due to the worldwide economic recession, the economy of Belize has shown signs of a steady recovery as from 2016, in an environment of low inflation. Recent data by the Statistical Institute of Belize show modest GDP increases and a declining unemployment rate.

As from 2014 the active insured population has been increasing significantly, yielding a coverage rate of two thirds the total employed labour force, that includes the self-employed (SIB data), with a level of compliance estimated at 90% by the SSB, excluding the self-employed. The inception of a self-employed scheme as from 1 March 2003, although on a voluntary basis in the first phase, does not have a material incidence in the total active insured population, due to a stagnant level of "voluntary" participation. **Statistical data show 45,000 persons categorized as "own business", of which only 3% are voluntarily contributing to the self-employed scheme, many on an irregular basis.**

The economy is characterized by a highly seasonal pattern of employment, and a significant proportion of insured persons spend part of the year either unemployed or in self-employed activities. Contributions are equivalent to approximately 2% of the Gross Domestic Product (GDP), and accumulated reserves are equivalent to 14% of GDP.

The total population of Belize has increased in the last decade at a pace similar to the high variant projections of the Statistical Institute of Belize (SIB). Such a rate of population increase is expected to decline in the future from an average of 2.7% in 2000/2010, to 1.5% as from 2018, but the new entrants in the labour force would be lower, averaging 1.2% per year. Family planning and higher educational standards

should slow the intrinsic rate of fertility. From an actuarial standpoint, high fertility rates contribute to delay in the ageing of the population and, thus, the demographic ratio of pensioners over active contributors. Nevertheless, the age-structure of the population has experienced a gradual change, with a demographic ratio (population 60 years and over divided by the population 15 to 60 years), that has increased to 10.5%, indicative of the gradual incidence of ageing and its emerging incidence on pension costs in the future. However, the gross mortality rates have declined from 28 per thousand in 1990/95 to 15 per thousand, and the life expectancy at birth increased by three years in the last 15 years, reaching an average of 73.7 years at present, according to estimates of the Statistical Institute of Belize (SIB), while the life expectancy at 60 years of age has also increased by approximately two years, impacting the actuarial cost of pensions in payment.

9. Actuarial Projections and Potential Amendments

Long-term actuarial projections have been carried out, based on legal provisions in force at the valuation date. However, structural legal amendments to the financing bases are presently under discussion by the stakeholders, with implementation anticipated the second-half of 2018. These amendments would have a material incidence on the cash flows of the SSB as a whole, and on each of the statutory branches. Therefore, the projections also show scenarios of a set of long-delayed actuarial recommendations, to ensure the financial sustainability and adequacy of the scheme.

Scenarios set forth below only provide estimates of general amendments initially submitted for consideration by the Board to the CEO, the actuary and the Senior Staff.

Discussions are on-going between the Board and the stakeholders, to reconcile alternative amendments submitted for consideration by the Board, before submitting a final proposals for approval by the authorities. Once these amendments are enacted, then the actuarial projections would have to be updated at the close of the present fiscal year.

In view of the above, the basic projection at the valuation date (31 December 2017) and the related actuarial parameters, are transitory and subject to material adjustments to be updated once the set of legal amendments are enacted by the Government Regulations and the House of Assemble (Act).

10. Summary of the Demographic Projections

The ratio of pensioners to active insured persons continue to increase an indicator of the demographic maturity of the long-term branch. The ratios are expected to evolve as follows:

Table 43

Trend of Demographic Ratios

(Pensioners ÷ Active Insured)

Year	Retirement Pensions	All Pensions
2014	5.0	7.8
2017	5.5	8.5
2020	6.8	9.2
2023[p/]	7.7	10.2
2030	10.3	11.4
2040	15.6	14.7
2050	23.6	21.6
2060	35.8	31.8

[p/]Projected

The analysis show that the actual demographic ratios are higher than the ratios projected at the triennial valuation at 31 December 2014 (5.5 vs. 6.0 for retirement pensions, and 9.2 vs. 8.5 for all pensions), due basically to a higher frequency than anticipated of early retirements at 60/62 years of age. This include a proportion of former self-employed persons who are able to continue to engage in remunerative work undetected by the SSB, due to the voluntary nature of the self-employed scheme.

Longer term, the demographic ratios would continue to increase, a normal pattern of a maturing pension scheme, as the rate of increase in pensions in force is higher than the rate of increase of active insured persons.

11. Financial Projections

Financial projections are subject to a greater degree of variability than demographic projections, due to the sensitivity of financial forecasts to changes in economic assumptions, such as the level of salary trends, inflation and pending legal amendments concerning eligibility and financing provision. The financial projections are based on the legal provisions in force, **but assuming long-term periodic adjustments to the ceiling and pensions in force in correlation with inflation, an assumption subject to fluctuations due to the period elapsed since the ceiling was adjusted in 2001. For these reasons, the projections are subject to material**

variations depending on the timing and nature of the proposed set of legal amendments.

The key indicator derived from the financial projections is the ratio of expenditure derived by the wage base of the active insured persons, or Pay-as-you-go ratio (PAYG). Its comparison with the contribution rate provides a measure of the adequacy of the financing bases of the long-term branch.

Table 44 presents a summary of the financial projections. The funding requirements of the branch are naturally lower, since investment income provides additional resources, albeit at a decreasing rate, as shown below in the projection of reserves. With a static ceiling on insurable earnings, the negative gap between income and expenditure tends to expand, yielding rising current deficits.

The PAYG ratio (expenditure/insurable earnings) increases steadily, providing an indicator of the income that will be required in the future to ensure the financial sustainability of the long-term branch, after offsetting the incidence of investment income.

Table 44
Summary of the Financial Projection (Present ceiling)
(Amounts in millions of BZ$)

Year	Contributions	Total expenditure	Current surplus (deficit)[1/]	PAYG [2/] Ratio	Actual Contribution Rate	Net Deficit
2014	40.5	47.5	(7.0)	(4.9)	4.5	(0.5)
2017	46.5	61.1	(14.6)	(5.9)	4.5	(1.4)
2020	50.0	72.1	(86.3)	(6.5)	4.5	(2.0)
2023	55.0	86.3	(31.3)	(7.1)	4.5	(2.6)
2030	68.7	131.8	(63.1)	(8.6)	4.5	(4.1)
2040	94.3	247.0	(152.7)	(11.8)	4.5	(7.3)
2050	129.5	473.5	(344.0)	(16.4)	4.5	(11.9)
2060	177.9	923.2	(745.3)	(23.3)	4.5	(18.8)

[1/] Excludes investment income
[2/] Ratio of total expenditure ÷ insurable earnings, in percent

12. Projection of Reserves, Periods of Equilibrium and Sensitivities

Table 45 shows a basic projection of actuarial reserves, as a by-product of the statutory contribution rate and the financial projections, with a nominal rate of return on investment of 5% per annum. Sensitivity tests of reserves and periods of equilibrium under alternative rates of interest of 3%, 4% and 6% are also shown. Periods of equilibrium range from only 1 year with a 3% rate of return to 2.5 years with a 6% rate of return.

Table 45
Summary of the Projection of Reserves and Periods of Equilibrium
(as from 31 December 2017)
(Present of Equilibrium (Present ceiling and no amendments)
(amounts in million of BZ$)

Year end	Nominal Rate of Return on Investments			
	3%	4%	5%[2/]	6%
2017	431	431	431	431
2020	410	423	437	450
2023	361	388	417	447
2030	80	134	203	279
2040	(d)	(d)	(d)	(d)
2050	(d)	(d)	(d)	(d)
2060	(d)	(d)	(d)	(d)
Period of equilibrium[1/] (Years)	1.0	2.0	3.0	4.0

[1/]Number of years when reserves start declining (as from 2017).
[2/]Basic assumption, equal to 3% real with 2% inflation.
[d/] Deficit

Table 45A

Summary of the Projection of Reserves and Period of Equilibrium (as from 31 December 2017) (Amounts in millions of BZ$)

Basic Assumption (5% normal return / 3% real)

Year-end	No Amendments	Only 500 ceiling (end 2018)	Ceiling 10% (2020)
2017	431	431	431
2020	437	454	456
2023	417	441	513
2026	361	392	549
2030	203	239	542
Period of Equilibrium	2 Years	4 Years	9/11 Years

13. Level Premium (Discounted Average Premium)

Average premium rates would theoretically generate a funded scheme, a model which is not very common in social security schemes.

A basic scenario discounting expenses and salaries at a real rate of 3%, (5% nominal and 2% inflation) yields an average premium rate of 14.4%. Adding a safety margin would yield a level premium of 15% of insurable earnings.

14. Adjustment to the Financing Bases

The foregoing analysis show that the financing structure of the long-term branch should be updated as from 2018, as otherwise reserves would start declining as from 2019/20.

An increase in the rate of early retirement; a 5% adjustments to pensions and to the minimum pensions in 2017; an involuntary 5% adjustment to new pensions as from 2017; the resumption of contribution to the staff pension plan, and salary adjustments, caused a faster increase than previously anticipated in total expenditure of the long-term branch, reducing the period of equilibrium assumed in the preceding actuarial reviews.

15. Impact on the Period of Equilibrium. Pending Amendments

Table 46 shows the impact on the period of equilibrium under specific amendments under consideration. The assessments are based on a nominal rate of return on assets of 5%, with a fluctuation of 1 to 2 years depending on the performance of the investment portfolio.

Table 46
Scenarios of the Period of Equilibrium (Long-Term Branch)

	Period of Equilibrium
D) No Amendments	2 years
E) Only $500 ceiling as from 1-1-2018	4 years [1/]
F) Option B + 10% Rate as from 1-1-2020	9/11 years [1/]

[1/] Includes reallocation of contributions from 4.5% to 5.2% of insurable earnings as from 1 January 2018, and restoration of the basic pension formula (eliminating the 5% up-front adjustment), plus or minus one or two years depending on the real of return on investments.

16. Incidence of Proposed Amendments to the Financing Bases

A. Reallocation of the Contribution Rate

- Ensures the long-term solvency of the short-term branch and guarantees the actuarial solvency of the EI branch.
- Extends moderately the Period of Equilibrium (PE) of the long-term branch.
- Administrative expenditure continues to exceed benchmarks.

B. Increase of the Ceiling to $500 per month

- Improves the **adequacy** of the SSB by reducing the gap between actual earnings and the SSB pensions.

- Extends temporarily the PE by approximately four years, but higher pensions accelerate benefit expenses and offset the gain in the PE.
- Reduces the actuarial cost of administrative expenditure but still at a level in excess of standard benchmarks.
- Does not address the solvency of the long-term branch the next decade, but temporarily promotes deferment of early retirement by insured persons 57 years of age and over.

C. 10% Rate in 2020

- Extend the PE of the long-term branch by about 10 years
- Allows a diversification of the investment portfolio into development projects.
- Has a material incidence in the reduction of the administrative expenditure.

17. Subsequent Events

After the valuation date, the Chamber and the Unions have submitted preliminary proposals concerning key amendments to the financing bases. The discussions are focused on two key items, namely: the pace of increase of the new ceiling and the 10% adjustments to the contribution rate.

V (A)

PERFORMANCE ANALYSIS OF THE SELF-EMPLOYED SCHEME

1. Registered and Active Contributors

The voluntary self-employed scheme started on 1 January 2003 and the number of active contributors has increased gradually in the period under review, with an effective coverage of three percent the number of self-employed persons in the country. An anomalous situation as it would be expected that most eligible self-employed would be males. This might be due to the inclusion of housewives among the "self-employed," a category which in many legislations are not considered as self-employed.

Global statistics show more than 30,000 eligible self-employed persons in Belize, of which 96% are ***not*** actively contributing in the SSB's voluntary self-employed scheme.

Table 1
Registered Self-Employed and Active Contributors by Year

Year	Active Insured Self-employed	Rate of Increase	New Registrations	Cumulative Registrations	Coverage Rate (Active / Registered) In percent ages
2012	1043	9.9%	441	4409	23%
2013	1,032	(1.1)%	391	4,800	22%
2014	1,094	6.0%	396	5,196	21%
2015	1,197	9.4%	400	5,596	21%
2016	1,389	16.0%	521	6,117	23%
2017	1,464	5.4%	439	6,556	22%

2. Distribution of the Self-Employed by Wage-Group

Table 2 shows the distribution of the active self-employed by wage-group, and the comparison with the distribution of employed persons. The data shows that one-third insured self-employed persons have declared low notional earnings would only 24% in the top wage branch.

Table 2
Percent Distribution of Active Insured by Wage-Group (31 December 2017)

Income Range	Weekly Wage-group	Percent Distribution	
		Self-employed	Employed
Low	Less than 110	33	11
Middle	110/300	43	49
High	300 and over	24	40
	Total	100%	100%

3. Comparative Distribution of Self-Employed and General Insured Persons

Table 3 shows that **21% of the active self-employed are 55 years and over, as compared to only 7% in the general scheme, an indicator of "adverse selection", in order to obtain a "financial gain" by participating in the self-employed scheme at later ages.**

Table 3
Percent Distribution of Active Self-employed by Age Group
(At 31 December 2017)

Age-Group	Percent	Percent
15/34	18%	56%
35/54	61%	37%
55 +	21%	7%
Total	100%	100%

4. Trend of Benefits Awarded to the Self-Employed

Table 4 shows the statistics related to benefit claims awarded to the self-employed.

Table 4
Benefits Awarded to Self Employed Insured Persons

Benefit Type	Number of Claims Allowed				
	2013	2014	2015	2016	2017
Total	230	201	224	268	326
Short Term	199	158	178	210	244
Sickness Benefit	164	137	162	191	214
Maternity Benefit	20	9	9	7	13
Maternity Grant	15	12	7	12	17
Long Term	23	31	40	46	66
Funeral Grant (NC)	1	0	2	0	4
Invalidity	2	1	3	3	1
Retirement	20	26	33	39	56
Survivor's	0	4	2	4	5
Employment Injury	8	12	6	12	16
Injury Benefit	8	12	4	11	15
Disablement	0	0	1	0	1
Death	0	0	1	1	0

5. Frequency of Short-Term Claims by the Self-Employed

a) Table 5 shows the frequency of short-term benefit by the active self-employed persons.

Table 5
Frequency of Claims by the Self-Employed. Short-Term Benefits

Year	Number of Claims	Number of Active Self-Employed	Incidence Rate	Sickness Benefit Only
2014	170	1,091	15.6%	12.5%
2015	184	1,197	15.4%	13.6%
2016	221	1,389	15.9%	13.8%
2017	244	1,416	14.2%	15.1%

6. Pension Benefits to the Self-Employed

Table 6 shows the number of pensions awarded to the self-employed, with a ratio much higher than for employed persons. In only 15 years of operation, the number of pensions in force has increased steadily**, as the individual has no employer,** an issue that will be subject to a specific assessment as from 2018.

The cost of short-term benefits has remained rather stable over the past five years, whereas the cost of long-term benefits increased from $563,808 in 2013, in 2017 (143%).

Table 6
Belize: Number of Benefits Paid to Self-Employed Insured Person by Benefit Type and Amount Paid

Benefit Type	2016	2017
Short-Term	**221**	**259**
Sickness Benefit	191	214
Maternity Grant	12	17
Maternity Benefit	7	13
Employment Injury	11	15
Long-Term	**232**	**315**
Death Benefit	2	2
Disablement Pension	11	14
Invalidity Pension	9	15
Retirement Pension	194	260
Survivors Pension	16	24
Amount Paid	**$1,113,029**	**$1,498,120**
Short-Term	**$89,186**	**$129,137**
Sickness Benefit	$61,444	$76,957
Maternity Grant	$3,600	$5,100
Maternity Benefit	$15,120	$26,251
Employment Injury	$9,022	$16,829
Funeral Grant	$0	$4,000
Funeral Grant Employment Injury	$0	$0
Long-Term	**$1,023,843**	**$1,368,983**
Death Benefit	$21,727	$15,163
Disablement Pension	$34,471	$42,559
Invalidity Pension	$28,489	$60,317
Retirement Pension	$867,087	$1,133,908
Survivors Pension	$72,068	$117,036

The aforementioned experience shows conclusively that self-employed persons are actively taking advantage of the faulty design of the self-employed scheme, obtaining life pensions after having paid contributions for a minimal number of years, at lower notional earnings, qualifying for the minimum pension of $49.35 per week.

Data also shows that more females than males are active contributors to the SE scheme, due to the anomalous inclusion of housewives as Self-Employed. Further, one-fifth are 55 and more years of age, but the incidence of Short-term benefits are lower than in the general scheme.

In view of the above, in addition to previous former legislative amendments, it would be advisable at least to require the attainment of 65 years of age to qualify for a retirement pension by the self-employed.

Table 7

Comparative Demographic Ratios (General versus Self-Employee Schemes)

	General Schemes	Self-Employed Scheme[a/]
	(Pensioners ÷ active contributors), in %	
Retirement	6.1%	17.7%
Invalidity ….	0.4	1.0
Widows [b/]	1.5	1.6
Total	8.0%	20.3%

Table 7 shows that in only 15 years, the maturity of the self-employee scheme as measured by the ratio of pensioners to active contributions is twice the maturity of pensioners in the general scheme, as measured by the number of pensioners divided by the active contributors at the close of the fiscal year. Although a proportion of former self-employed pensioners also had previous credits as employed persons, the disparity in the demographic ratios show the "window of opportunity" offered by the voluntary self-employed scheme allowing insured persons to activate their self-insured status and take advantage of the liberal provisions of the scheme, to obtain life pensions lasting 20/25 years after credited contributions for only 10 years, is having a negative impact on the sustainability of the long-term branch.

7. Financial Performance

Table 8 shows the widening gap between contributions and expenditure of the self-employed scheme.

Table 8

Financial Performance of the Self-employed

	2017	2016
Contributions	742,676	662,182
Benefit Expenditure	(1,498,120)[a/]	(1,113,029)
Share of administrative expenditure	(200,000)	(189,000)
Total expenses	(1,698,120)	(1,302,029)
Net deficit	(955,444)	(639,847)

[a/]91% pensions and 9% short-term benefits.

8. Actuarial Cost of the Self-Employed Scheme

The scheme is financed by 7% of insurable earnings, and already is confronting financial deficits, as shown in Table 9. Such deficits are funded by internal transfers from the general scheme that will worsen over time the actuarial situation of the long-term branch. The actual liability of pensions in payment at 31 December 2016 is estimated at approximately $12 million.

Table 9
Actuarial Cost of the Self -Employed Scheme
(In percent of insurable earnings)

	2016	2015
Contributions	7.0%	7.0%
Short-term benefits	0.9	1.3
Long-term benefits	10.6	10.8
Administrative expenditure	1.5	1.5
Total expenditure	13.0%	13.6%
Surplus (deficit)	(6.0)%	(6.6)%

V (B)

ASSESSMENT OF THE NON-CONTRIBUTORY PENSION SCHEME

1. Background

The payment of Non-Contributory Pensions (NCP) was transferred from the Ministry of Social Services to the SSB in July 2003.

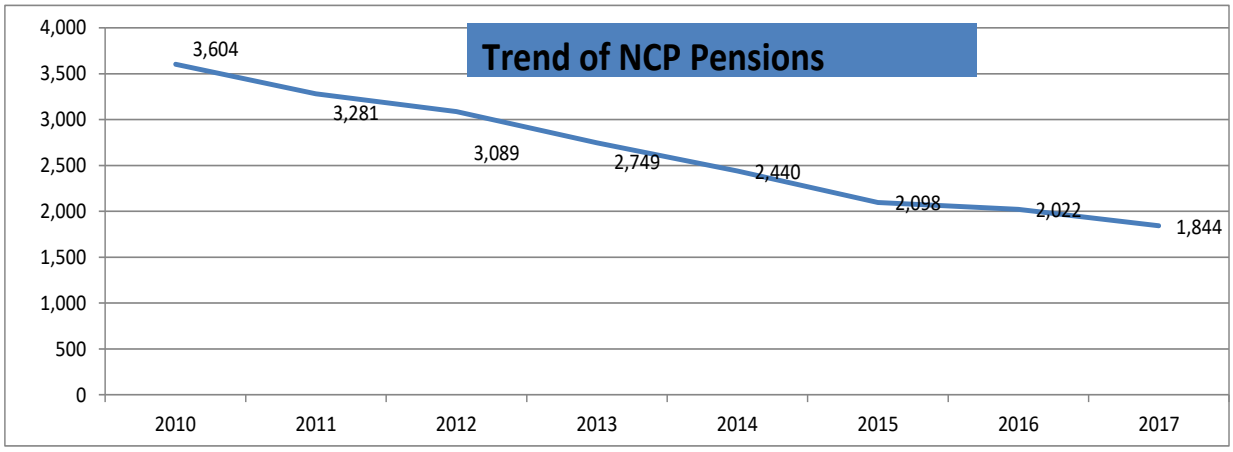
In December 2007, the Government decided to add eligible males as beneficiaries of NCP and increased the payment to $100 per month, which caused a significant increase in the number of beneficiaries and benefit expenditure.

2. Trend of Pensions in Payment

The total number of NCPs has declined steadily from a peak of 4,934 early in 2008 to 1,844 pensions in payment at December 2017. The mortality of pensioners and more thorough evaluation procedures contributed to offset the abnormal surge of pensions awarded during the initial phase of operations.

Table 1
Trend of NCP Pensions (at 31 December)

	2017	2016	2015
Number of pensions in payment			
Males	614	666	713
Females	1,230	1,356	1,385
Total	1,844	2,022	2,098



3. Financial Trends

Table 2 shows the trend of benefit expenditure on non-contributory pensions with a steady reduction in benefit expenditure and a lower incidence in long-term actuarial cost.

Table 2
NCP Benefit Payments
(Amounts in thousands of BZ$)

Year	Expenditure[a/] (BZ$)	Rate of Increase (decrease) in %
2010	$4,201	(10.7)
2011	$4,189	(1.3)
2012	$3,781	(8.8)
2013	$3,404	(10.0)
2014	$3,032	(10.9)
2015	$2,754	(9.2)
2016	$2,505	(9.0)
2017	$2,297	(8.3)

[a/] Financial statements

4. Rates of Award and Terminations

Table 3 shows the rates of terminations and awards in the past three years. A gross death rate of 12.3% for terminations in 2014 has exceeded the 1.1% rate of new awards, thus yielding a 11.2% reduction in the number of pensions in force.

Table 3
Rates of Award and Terminations of NCP
(In percent)

	2017	2016	2015
Death	(7.1)	(5.2)	(5.2)
Other	(4.1)	(5.0)	(5.0)
Sub-total	(11.2)	(10.2)	(10.2)
New awards	2.5	2.3	2.3
Net increase (decrease)[a/]	(8.8)	(7.9)	(12.0)
Balance at 31 December	1,844	2,022	2,098

[a/] Related to the balance at the beginning of each year

5. Actuarial Cost of the Scheme

The actuarial cost of benefits has evolved as follows, excluding management expenses:

Table 4
Actuarial Cost of NCP Benefits

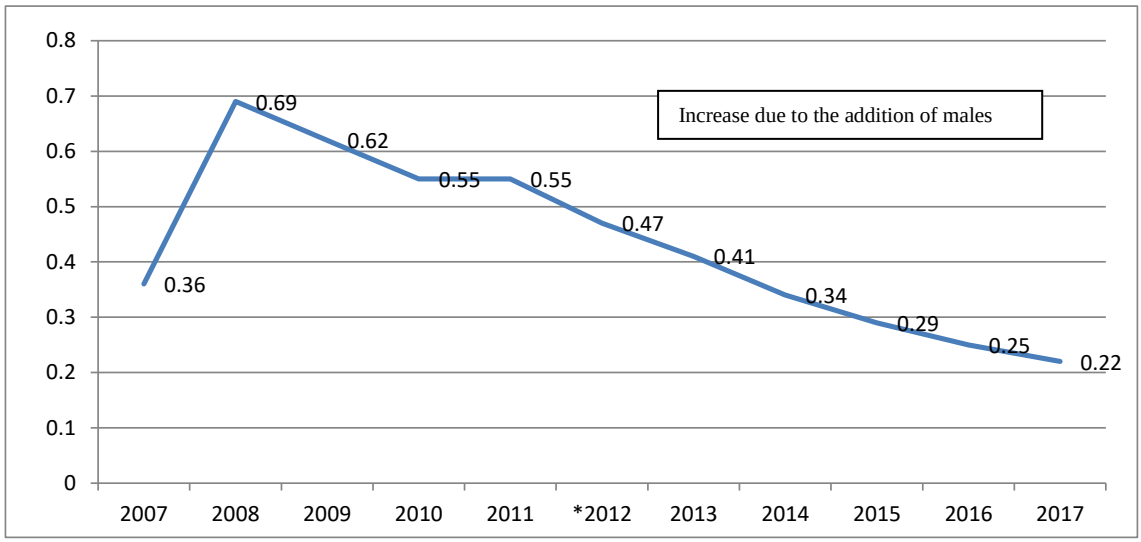
Year	Percent of insurable earnings
2007	0.36%
2008	0.69%*
2009	0.62%
2010	0.55%
2011	0.55%
2012	0.47%
2013	0.41%
2014	0.34%
2015	029%
2016	0.25%
2017	0.22%

* Increase due to the addition of males

At the 2014, triennial actuarial valuation the PAYG cost of NCP was projected at an average of 0.24% of insurable earnings, with mortality of pensioners offsetting the award of new pensions to a significant extent, declining to only 0.22% at 31 December 2017. Assuming a restricted pace of revaluation of pensions in payment, jointly with a long-delayed adjustment to the ceiling of insurable earnings, the updated long-term trend for 2018/19, shows actuarial costs of 0.18% of insurable earnings. Raising the initial eligibility age to 67 years for females would reduce further the actuarial cost.

Actuarial Cost of NCP Scheme

(% of insurable earnings)



6. Amendments to the Non-Contributory Scheme

The actuary concurs with the recommendation of the NCP Committee to increase to 67 years the minimum entitlement age of females, in accordance with international guidelines, setting the eligibility age two years higher than the SSB normal retirement age; to increase to 20 years the residency requirement for naturalized residents; to allow only one NCP to spouses or persons in the same household, and the non-entitlement to a NCP if the individual has opted for the SSB grant.

Jointly with the re-allocation of contributions between the Short-term branch and the EI branch, and amendments to the Self-employed scheme, the proposals set forth above should be included in the set of legal amendments required by the SSB in the first phase. Transferring to the Government the financing of NCP would require only deleting the NCP Regulations but keeping the Committee as the management entity of the NCP scheme.

Section 18 of the regulations stipulates an **option** between the Grant and the NCP. As insured persons are allowed to claim the grant of ages of **60 to 65 years,** the Committee should verify if claimants have previously received the grant, and if so, to disallow the NCP claim.

VI
ASSESSMENT OF THE INVESTMENT PORTFOLIO
(Third Schedule of the Act, Section 17)

1. Investment Portfolio

Table 47 shows the investment portfolio of the scheme at 31 December 2017 and 2016. The SSB investments are made on a "pooled-fund" basis rather than by branch, and then distributed in accordance with the assets of each branch, as an interpretation of the provision of Section 14(2) of the Financial Regulations. In the last fiscal year, the Board increased the allocation in Associates and long-term investments and reduced the proportion in other categories.

Table 47

Percent Distribution of the Assets (at 31 December)

	2017	2016
Cash equivalents	5.7	5.6
Short-term investments	5.0	5.3
Long-term investments	40.9	36.3
Investment in Associates	38.7	35.5
Sub-Total	90.3	82.7
Other assets	9.7	7.3
Total	100	100

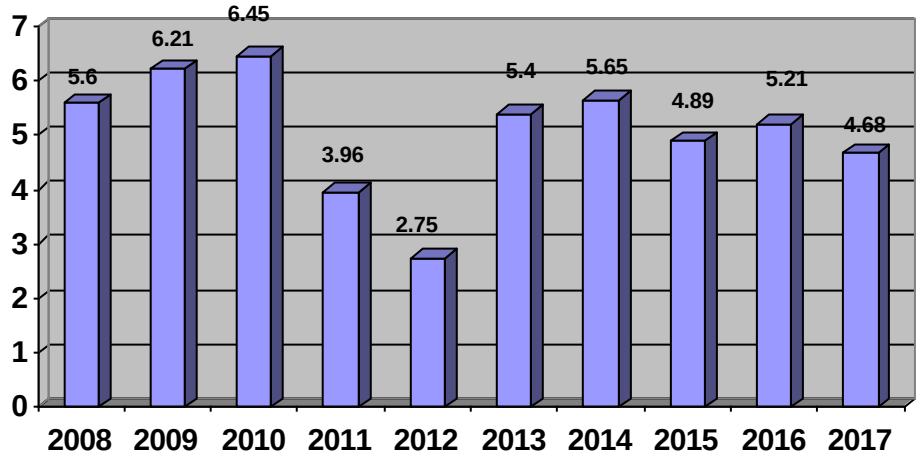
2. Rates of Returns on Investments

Pursuant to the legal provisions, an analysis is presented below of the investments, the strategic assets allocation, and related technical issues, as required by the Third Schedule of the Social Security Act, as a supplement to the statutory actuarial valuation.

The analysis shows nominal rates of return of 4.68% in 2017 (5.22% in 2016 and 5.16% in 2015), as shown in Table 7, Chapter 2, a satisfactory performance arising basically from the allocations to domestic entities (BEL and BTL), which have been yielding dividends substantially higher than the interest payable by financial institutions.

Nominal Rate of Return on Investments

(In percentages)



3. Cash Balance

Pursuant to the provisions of Section 19 of the Financial and Accounting Regulations, the SSB should maintain a **cash working balance to meet current expenditure of two months average expenditure over the preceding three financial years.** The amount as at 31 December complies with the aforementioned requirement.

4. Diversification of the Portfolio

As the short-term bank deposits are below the actuarial rate, an increase in allocations in Central Bank obligations would enhance the SSB ability to obtain a real rate of return on the investment portfolio in accordance with the actuarial recommendations, a strategy under consideration by the SSB, as well as a higher asset allocation to "development" investments rather than "financial" investments, as shown in the Appendix.

It is also noted that the SSB is essentially a subordinate provider of loans to private enterprises, and not a substitute for the traditional banking sector lending activities. The Board is also advised to require the return of dividend and interest in cash, as no recapitalization of shares are feasible due to the SSB need of liquid returns. Avoiding allocation in a single entity in excess of 20% of assets should also be required, in compliance with ISSA guidelines.

5. Investment Constraints

The purchase of additional shares issued by statutory bodies or private enterprises is no longer advisable, to meet diversification and liquidity principles. The actuary is also of the opinion that, in the absence of an urgent adjustment to

the outdated ceiling on contributions, the liquidity position of the SSB and ultimately its financial sustainability, would be seriously compromised, as set forth in the periodic actuarial reviews.

This negative process would be abetted by an increase of pensions in force and administrative expenditure at a higher rate than contribution income, resulting eventually in declining reserves when total income becomes lower than total expenditure (Period of Equilibrium), a process that has been impacted by a lower return of the investment portfolio and higher pension expenses, including a 5% adjustment to pensions in payment as from 1 April 2016.

6. **Scenario of Risk Adjusted Returns**

The Sharpe Ratio is a risk-adjusted measure of the excess return of a portfolio and how efficient the asset allocation is on a risk / reward basis. **The higher the ratio the better the performance.**

Assuming a risk-free return of 5%, the Sharpe Measure yields the following risk-adjusted return for each category.

S=Rp – r / SD, where **Rp**=Return of the investment, **r=** Risk Free return (Central Bank Notes).

SD= Standard deviation

The higher the Sharpe Ratios the better the risk adjusted return on the investments.

Sharpe Ratios (Post -ante) 2016

Term deposits = (0.025 – 0.050) / 0.05 = **-0.50**
Associates & loans= (0.065 – 0.050) / 0.10 = **0.12**
Total portfolio = (0.0462 – 0.050) / 0.06 =**- 0.05**

The post - ante examples, based on actual returns show that high-risk investment in Associates and loans (with higher nominal returns and risks) performed better than low-risk bank deposits. The assessment shows the advisability of reducing the high proportion of assets in Bank CDs, avoiding further allocations in shares, while increasing the positions in Notes at the Central Bank. The formulae show that with issues at the Central Bank yielding 5.25% risk free (plus contingent CPI adjustments), rates payable on new loans should exceed 7.8% to 8%, to yield a risk adjusted return compatible to the Central Bank Notes.

7. Liquidity of the Investment Portfolio

In view of the increased actuarial maturity of the scheme, the Board is advised to seek an adequate level of liquidity on new investments. Actuarial liquidity means that the investment could be realized in cash when actuarially required, with an investment horizon, which, at present is rather time-limited, including Central Bank obligations.

The actuary also advises cautionary measures in non-liquid assets as collateral on commercial loans, such as land or fixed assets, which might have a fair value lower than the appraisal value in case of a forced liquidation. Financing parameters for collateral loans could range from 40% to 70% depending on the type of property, and could ever be lower for collateral such as land.

The actuary further advises avoiding additional purchases of local shares, as there is no active securities market in Belize due to liquidity concerns, as well as the higher risk of a shareholder as compared to a bondholder or depositor. Allocations on high quality shares or bonds abroad could be evaluated in due course, as a diversification policy of the investment portfolio.

The significant reduction in the rates of interest payable by the local banks, due to excess liquidity and restrained demand by personal and institutional borrowers, is having a negative incidence on the rates of return. It is not possible to ascertain for how long this cycle will persist, but as the economic slowdown subsides, the demand for loans, and thus the "passive" rates of interest, should again move upward.

The Board could assess the feasibility or negotiating with the banking sector the establishment of "special deposits", for loans to private enterprises or individuals (earmarked), at the same rates that "active" interest rates are payable by borrowers, allowing the banks an adequate profit margin, yielding a net SSB return that might be higher than the "passive" rates payable on term deposits. To this effect, the SSB financial area should inform the Board, on a periodic basis, of the on-going rates charged by the banks on personal and institutional loans, plus closing costs.

As the GOB has a direct subsidiary obligation to guarantee the financial solvency of the SSB, **the purchase of additional Treasury Notes or Bonds are deemed a more secure investment than private sector obligations.**

The actuary reiterates that the SSB is in the midst of a second-phase of actuarial maturity, with contributions lower than expenditure by a steadily wider margin, as shown in the actuarial valuation. **As a result, the availability of cash for new investments arises exclusively from a decreasing share of investment income, and allocations to instruments that do not provide liquid cash returns. This would restrict the availability of funds to meet current obligations, requiring the potential liquidation of deposits to pay benefits, unless legal amendments are enacted to increase the level of contributions to the long-term as from 1 January 2018.**

VI / A

SECTORAL ANALYSIS OF THE INVESTMENT PORTFOLIO AND ENHANCEMENT OF DEVELOPMENT ISSUES

1. Summary

The sectorial structure of the investment portfolio shows a skewed distribution in favour of **Financial Issues** as compared to **Development Issues,** the former comprising 78.4% of the portfolio at 31 December 2017. In view of the above, the CEO provided the actuary with specific models in order to attain a more adequate balance, in accordance with recognized diversification principles and Board's policies, to enhance the development of the agricultural sector of Belize, as discussed at a special meeting in the Investment and the Strategic Committees of the Board held the 24 January 2018.

An analysis of the medium-term cash flows shows the advisability to restructure the distribution of the investment portfolio by:

- Freezing temporarily the allocation to utilities and targeting fresh funds to productive sectors of the economy. This would cause a gradual reduction of the **relative distribution** of the investments in utilities from 57% of the portfolio to 53% in 2020, and 40% in 2025.
- Priorizing the investment of fresh funds targeted to the Agricultural and related sectors, in order to enhance the value of exports, employment creation and additional social security contributions, from 21.7% to 35% in the same period.
- The attainment of these goals **is subject to the implementation of the long overdue set of legal amendments**, as otherwise surplus funds between income (contributions and investments), and total expenditure (benefits and administration), would become negligible in 2018 and negative as from 2020. The latter the date of implementation, the more stringent the adjustment to the financing bases in order to guarantee the actuarial sustainability of the scheme.
- As show in Tables 4 and 5, once the legal amendments are enacted, a material amount of fresh funds would become available to target funds to development issues, although the distribution at the specific dates would depend on market condition, as the Board might modify the anticipated

distribution if, for example, GoB bonds and/or utilities offer a better "risk / reward" ratio than agricultural loans.

- The analysis also shows that the financial statements at 31 December 2017 adequately meets the Cash Working Balance set forth in Section 19 of the Financial Regulations, as well as the Liquidity Position, which was updated late last year addressing concerns by the Chairman of the Board and the CEO.
- The Actuary appreciates the technical guidance by the CEO and the Investment and Strategic Committees of the Board for the technical and policy guidance concerning the composition of the investment portfolio in order to enhance the economic development of Belize.

2. Investments Trends (2017/2016)

Table 1 shows the relative distribution of the investment portfolio in the last two fiscal years. The structure of the investment portfolio shows a significant increase in allocation to utilities, increasing from 47.8% to 57.1% of the portfolio in 2017, as well as a moderate increase in GoB / Central Bank obligations, from 14% to 15.4%, the latter to take advantage of attractive rates of interest offered by the Central Bank on Treasury Notes. The higher allocation to utilities and Treasury Notes was balanced by a drastic reduction of CDs by commercial banks at unattractive rates of interest, in an environment of excess liquidity in the economy.

Sectorial Analysis of the Investment Portfolio (at 31 December)

A. Financial Issues

	2017 (Unaudited)	2016 (audited)	Variance %
Certificates of Deposits & Shares	5.2%	14.8%	(9.6)
Treasury Notes, Bonds & GoB	15.4	14.0	1.4
Investment in Associates & Utilities	57.1	47.8	9.3
Short-term	a) 45.4	a) 35.5	9.9
Long-term	b) 11.7	b) 12.3	(0.6)
Municipal Loans / Bonds	1.6	1.7	(0.1)
Financial Provisions	(0.9)	(1.0)	0.1
Sub-Total Financial Issues	78.4%	77.3%	1.1
B. Development Issues			
Development Finance Corporation[1/]	5.2	5.2	-
Agricultural	9.2	9.2	-
Tourism	5.4	6.1	(0.7)
Education	0.2	0.3	(0.1)
Housing & other	1.6	1.9	(0.3)
Sub-Total Development	21.7%	22.7%	(1.0)
Total	100.0%	100.0%	-

[1/]Development projects

INVESTMENT PORTOFOLIO (2017)

- **Higher allocations to utilities (shares & bonds) 57% of the portfolio, and a moderate increase in Treasury Notes (15.4%).**
- **A drastic reduction of CDs, which are yielding unattractive interest rates**
- **Additional allocations to utilities not advisable (diversification principles).**

3. Financial and Development Allocations

As shown in Table 1, the balance between financial and development investments is skewed forwards to former, with financial issues comprising 78.4% and development issues only 21.7% of the investment portfolio. The CEO and the Board are of the opinion that fresh funds should be targeted to development projects rather than additional placements in financial issues, with a more adequate balance between these two sectors. The adjustment however has to develop gradually, as the allocations to utilities would be frozen in nominal values, rather than subject to partial liquidation.

Table 2 shows that, in addition to the investment portfolio (86.9%), the actuarial reserve (ST/LT/EI), the Board maintains 13.1% in other assets, **of which $30.64 million are cash in banks to ensure an appropriate level of "working balance"**, **and $37.33 million in other assets** (fixed assets, interest receivable, etc.). It is noted however that several short-term investments can also be categorized as liquid investments, an issue that can be better assessed by the structure of the Balance Sheet.

Table 2
Investment Portfolio and Actuarial Reserves (at 31 December)
(Amounts in thousands of BZ$)

	2017 (Unaudited)		2016	
Item	Amount	Percent	Amount	Percent
Short-Term Investments	232,474	(44.4)	235,485	(41.2)
Long-Term Investments	222,096	(42.5)	201,994	(39.6)
Total Investment Portfolio (A)	454,570	(86.9)	437,479	**(85.8)**
Actuarial Reserves (B)	522,528	(100)	510,196	(100)
Other assets: Difference (B-A)	67,958	(13.1)	72,717	(14.2)
a) Cash & equivalents	30,640	(5.9)	26,326	(5.1)
b) Other	37,318	(7.2)	46,391	(9.1)

4. Cash Working Balance and Liquidity Requirements

a) Cash Working Balance

Section 19 of the financial regulations stipulate a "**cash working balance**" of two months average expenditure over the preceding three years. At 31 December 2017 the unaudited financial statements shows a cash position of $30.6 million (Table 3), twice the statutory minimum of $14.1 million.

Table 3
Comparative Liquidity Position (at 31 December)

	2017	2016
	(amounts in millions of BZ$)	
Cash & equivalents	30.6	29.3
Short-term investments	26.2	80.3
Total	56.8	109.6

b) Liquidity Position

In addition to the minimum **cash working balance, liquid assets** also include short-term investments in CDs and related items, for a total of $56.8 million at the close of 2017, as shown in Table 3, despite a drastic reduction in short-term investments in 2017 as compared to the preceding year, in accordance with updated actuarial guidance on liquid positions. Going forward, liquidity requirements should be assessed periodically in relation to emerging scenarios concerning the implementation of the set of legal amendments.

5. Proposed Adjustments to the Investment Portfolio

The CEO requested the actuary to evaluate alternative investment goals, similar to the Tanzania model in developing countries, to restore a more adequate balance of the investment portfolio **between Financial Issues and Development Issues.**

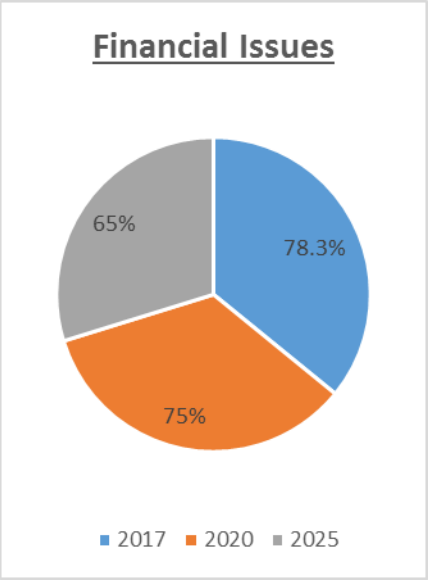
Table 4 shows a scenario increasing the proportion of **Development allocations** from 21.7% to 35% in eight years. Conversely, the proportion in **Financial Issues** would decline from 79.4% to 65%, with a balance of the portfolio more in accordance with diversification guidelines.

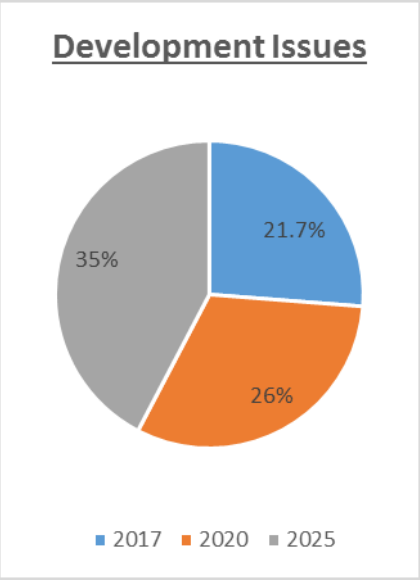
The **gradual decline in allocations to utilities would be attained by freezing** the nominal allocation in monetary terms, rather than investments. **Fresh assets would then be re-directed in its entirety to Development Issues,** particularly the **Agricultural Sector,** from 9.2% of the portfolio to 13% in 2020 and by 23% in 2025. This is contingent upon the articulation of a solid investment startegy complete with risk parameters for each sector of investment e..g, agro-productive and the setting of investment ceiling per sector e..g, 20% of reservers in agroproductive sector etc.

Table 4
Proposed Medium-Term Investment Limits by Category (2018/22)
(Adopted / Tanzania Model)

Item	2017	2020	2025
GoB and private financial entities obligations	15.4%	16%	17%
Investment in utilities	57.1	53	40
Certificates of Deposits	5.2	4	4
Other (municipal, loans, etc.)	0.6	2	4
Sub-Total (Financial Issues)	78.3%	75%	65%
DFC	5.2	5	5
Agriculture	9.2	13	23
Mortgages / Land / Tourism / Education	7.3	8	7
Sub-Total Development Issues	21.7%	26%	35%
Total	100.0	100.0	100.0

Relative Distribution of the Investment Portfolio (2018/2020/2015





6. Evolution of the Investment Portfolio in Nominal Amounts

Table 5 shows the scenarios targeting fresh funds to Development Issues, mainly the agricultural sector. The allocation, including DFC, would increase from $65 million to $90 million in 2020, and double to $180 million in 2025, assuming investments in utilities would remain frozen in nominal terms at $260 million. Investments in financial issues could also increase, provided rates of interest on GoB bonds or utilities remain attractive at the specific dates. The final distribution would remain with the Board, based on market conditions at the respective dates, taking into consideration recommendations of the Investments Committee.

Table 5
Assumption: Implementation of the Legal Amendments with a Financial Incidence
(At 31 December)

	2017	2020	2025
	(amounts in millions of BZ)		
GoB Financial entities	70	80	105
Utilities	260	265	260
Other	26	30	45
Financial Issues	356	375	410
Agricultural DFC	65	90	180
Other	34	35	50
Development Issues	$99	$125	$230
Total	$455	$500	$640

7. Attainment of the Investment Goals and Implementation of the Legal Amendments

The enhancement of the investment portfolio with fresh funds targeted to the agricultural and related social sectors would be constrained if the proposed set of legal amendments were not applied timely, as follows:

Scenario A. No Legal Amendments: SSB would be unable to comply with the investments goals and will have to start liquidating assets as from 2020, as total income (contributions + investments) would be lower than total expenditure.

Scenario B. Partial Legal Amendments (only ceiling): Positive $15M of additional income as from 2018 would decline steadily in 2019 and 2020. Enhanced liquidity would allow only a marginal increase in allocations to development projects.

Scenario C. Full Set of Legal Amendments (Ceiling +2% rate in 2020): Allows a full development of the distribution of the investment portfolio, with rising cash flow as from 2020 until 2027/28. An expansion of the investment portfolio, including additional allocations to the agricultural sector, land and offshore investments (US shares & Bonds), would then become feasible.

VII

ACTUARIAL ASSESSMENT OF THE NATIONAL HEALTH INSURANCE PROGRAM

1. Background

As stipulated in Part VI of the Social Security Act, the Board has been entrusted with the management of the National Health Insurance program (NHI). However, the financing regulations have yet to be enacted and transitional pilot projects have been in operation in specific areas of Belize City, then in the Southern Region (Stann Creek and Toledo Districts), and gradually in the Northern Region as from 2016.

2. The Health Care Model in Belize

Belize has a multiple health care model based on three pillars, namely: a) services provided by the MOH, b) limited regional services provided by the NHI, and c) private services through insurance companies or facilities offshore.

The NHI program is limited in coverage; its restricted primary health care package of benefits (excluding surgery, general hospitalization and other services), was funded in its entirety by the SSB until December 2007, co-financed with GOB transfers as from 2008 and entirely by GOB funds as from 2009.

3. Financing of the Program

In the first phase, the program was financed by the SSB, which implied a substantial financial burden to the SSB of about BZ$40 million. From a fiscal standpoint, the redistribution of income was very regressive, as funds contributed by all stakeholders were utilized to benefit a small segment of the population, regardless of their social insurance status.

As from late 2006, in view of the financial inability of the SSB to earmark additional funds for the roll-out (expansion) to additional geographical areas, the Government began to supplement the funds allocated by the SSB with transfers from the MOH budget and direct Government transfers. As recommended in the actuarial assessment, no further SSB subsidies were feasible, and as from 2009 the program has been financed exclusively by GOB transfers to the SSB, and residual reserves from previous SSB transfers, which have been consumed.

4. Actuarial Systems

The program operates on a pay-as-you-go basis, with income based on GOB contributions equivalent to expected expenditure, and a margin for a contingency reserve. The same system would be applied if the financing model were expanded to include additional sources of revenue.

5. NHI Financial Trends

Expenses in 2015 were lower than GOB transfers, reducing the reserve to $1.89 million. A non-material surplus in 2016 increased the reserve to $1.96 million, and a further surplus in 2017 increased the reserve to $2.206 million.

Table 48
Financial Trends of the National Health Insurance Fund
Amounts in thousands of BZ$

	2017[a/]	2016	2015
Total contributions (GOB)	17,000	17,000	17,025
Payments to providers	15,937	16,141	17,937
Operating expenses	801	778	757
Total expenditure	16,738	16,919	18,694
Excess of income over expenditure	262	81	(1,669)
NHI Reserves [b/]	2,206	1,960	1,891

[a/]Unaudited financial statements.
[b/]Excludes claims pending payment

6. Financial Ratios

Key financial ratios have evolved as shown in Table 50.

Table 49
Key Financial Ratios

	2017	2016	2015
Benefits as % of contributions	93.7%	95.8%	105.4%
Total expenses as % of contributions	98.5%	99.5%	109.8%
Operating expenses as % of benefits	5.0%	4.8%	4.2%
Fund ratio (reserves ÷ total expenditure)	0.13	0.12	0.10
* In months	1.6	1.4	1.2

The analysis shows a level of reserves equivalent to only 1.6 months of expenditure, (1.4 months in 2016) **which is below the minimum international accepted benchmarks of six months expenditure**. The ratio would decline further if outstanding claims were deducted from the reserves. Therefore, a key task of the NHI is to strengthen the Fund Ratio with contingency reserves equivalent to six months average expenditure, to cover potential increases in claims or the need for additional GOB funding.

If outstanding claims are equivalent to 5% the average monthly benefit expenditure, a rather liberal ratio, about almost $1 million would be deducted from the gross reserve, practically erasing the reserve registered in the accounts.

7. Summary of Financial Operations by Region

Table 50 shows a summary of the financial operations by region, according to the NHI activity reports. Expenses in Southside Belize increased to 57% of the total, as several services are provided only in Belize City. Expenses in the Northern Region account for only 8% of the total, with the cost of clinical services in that region were compensated by a reduction in expenses in the Southern Region.

Table 50
Financial Operations by Region
(percent distribution)

	2017	2016	2015
South Side Belize City	53	50	54
Southern Region	35	40	37
Northern Region	7	5	5
Total purchasing expenses	95	95	96
Administrative expenses	5	5	4
Total expense	100%	100%	100%

8. Cost of Benefits by Type of Service

Table 51 shows the cost of benefits by type of service and region. Services in the Southern and Northern Regions are limited to Primary Care, Ophthalmology and hospital deliveries. PCP accounts for 73% of total benefits expenditure, pharmaceuticals at 12%, and Lab tests 9%, with non-material secular variations.

Table 51
Benefit NHI Expenditure by Specific Service, (in thousands of BZ$)

	2017	2016	2015
Primary Care (PCP)	10,993	10,957	11,226
Pharmacy	1,748	2,009	2,221
Imaging	579	617	686
Lab tests	1,299	1,361	1,450
Ophthalmology	236	207	240
Hospitalization	223	259	302
Total (both regions)	15,078	15,410	16,125

9. Membership Data

Table 52 shows the membership (beneficiaries) data for the last three years, with a decline in the number of beneficiaries in 2017, as per preliminary data.

Table 52
NHI Membership Southside Belize and Southern Region (December)

	2017	2016	2015
BFLA	13,693	14,041	13,530
BMA	13,293	13,825	13,418
Integral	13,795	14,370	14,254
M. Roberts	12,363	13,866	13,733
Sub-total	53,144	56,102	54,935
Dangriga	16,336	16,838	16,327
Independence	14,147	13,890	13,515
Punta Gorda	12,477	13,093	12,724
San Antonio	9,498	9,917	9,939
Mercy Clinic	1,758	1,657	1,459
Sub-total	54,216	55,395	53,964
Total	107,360	111,497	108,899

10. Actuarial Cost of the Program

Table 53 shows the actuarial costs as a percent of the wage-base, showing estimated actuarial costs of 5.40% in 2017 (5.32% in 2016), assuming a "notional" wage base of 30% the total SSB insurable earnings.

Table 53
Estimated Actuarial Cost of Benefits (2014 valuation)
(Amounts in thousands of BZ$)

	2017	2016	2015
SSB wage base	1,032,625	1,001,150	967,262
NHI beneficiaries (average)	109,428	110,198	108,784
NHI wage-base (30%)[1/]	309,787	300,345	290,179
NHI benefit expenditure ($)	15,937	16,141	17,937
Administrative expenditure ($)	801	778	757
Total expenditure	16,738	16,919	18,694
Cost as % of NHI wage-base	5.40%	5.33%	6.44%
Cost per member per year	$156	$155	$168

[1/]Estimated average wages of the low income and indigent segment of the NHI target population. Subject to re-assessment.

NHI has been covering a rather limited range of benefits, excluding key services such as general hospitalization, surgery, drugs to outpatients, etc. Adding this to the package of benefits would entail additional costs to be borne by the GOB.

The total cost of a comprehensive package of benefits to the total population of the country (universal coverage) would amount to approximately 7.5% to 8.5% of the SSB insurable earnings, or BZ$60 million. Deducting from this amount the GOB budget for healthcare with the Ministry of Health and other statutory bodies, along with private health insuring policies, would provide general indicators of additional resources

required to set up a universal National Health Insurance Plan in Belize, funded by contributions and / or earmarked taxes.

11. Cost Estimates of the Rollover

The additional cost to the GOB would depend on the proportion of beneficiaries to be covered, whether 100% or a lower proportion. A specific analysis should be carried out in order to assess the utilization and cost of the pending rollover.

12. Conclusions and Recommendations

The GOB has in place a program for residents of a section of Belize City and selected areas in the Southern and Northern Regions, financed by budget transfers. The reserve ratio represents only 1.4 months of expenditure as at 31 December 2016, below the accepted benchmarks of six months' average expenditure. The ratio may fall further taking into account outstanding claims not reflected yet in the financial statements.

The estimated average actuarial cost is assessed at 5.4% the notional wage base of the targeted population and the unit cost per beneficiary is assessed at $155 per year. Primary health services account for about 60% of total benefit expenditure, and closer coordination of services with the Ministry of Health might improve the cost ratios.

The actuarial cost to cover additional geographical areas under alternative financing scenarios was assessed in an actuarial report submitted by the actuary in June 2008 (NHI Assessment of Actuarial Costs and Financing Options), which should be updated based on emerging trends.

The authorities have not yet adopted a decision on the remaining roll-out strategy or the financing of the scheme, and more comprehensive actuarial assessments should be carried out once policy decisions in this respect are adopted. The administrative cost of the scheme is below 5% of benefits, within accepted benchmarks.

As per Part II of the Social Security Act, the NHI Scheme is managed by the Board, but financing is the responsibility of the Government. Therefore, the scheme is cost-neutral to the SSB, despite marginal supervisory and financial support by the SSB.

ANNEX A

SUMMARY OF BENEFIT PROVISIONS

A. Sickness Benefit

Eligibility:	Insured persons rendered temporarily incapable of work, over 14 years and not older than 65 years of age, and in insurable employment when becoming incapacitated for work.
Contribution Conditions:	Not less than 50 contributions paid, and in insurable employment on the day of the incapacity with 5 weeks of contributions in the preceding 13 weeks.
Duration of Payment:	From the first day of incapacity (as from 1 January 2003) and for a continuous period of sickness not exceeding 39 weeks or 234 days. (Paid from the third day in 2001 and from the second day in 2002). From the first day in 2001 and 2002 if, the incapacity lasts for 14 days or more.
Rate of daily benefit:	80% of average weekly insurable earnings divided by 7 the first 156 days, and 60% the remaining 78 days (Sundays included).
Average weekly insurable earnings:	Total weekly insurable earnings on which contributions were paid in the preceding 13 weeks divided by the number of weeks for which contributions were paid.

B. Maternity Benefits

(a) Maternity Allowance

Eligibility:	Payment to an insured woman in case of pregnancy and confinement.
Contribution conditions :	Not less than 50 contributions paid since the appointed day (1 June, 1981) and in the period of 39 consecutive weeks immediately preceding the sixth week before the expected date of confinement; not less than 30 contributions must have been paid or credited (of which 20 must have been actually paid).
Starting date of payments:	Not earlier than 7 weeks before the expected date of confinement.
Rate and duration of weekly benefits:	80% of average weekly insurable earnings, for a period of 14 weeks.
Average weekly insurable earnings:	Total weekly insurable earnings on which contributions were paid in the 39 weeks preceding the sixth week before the expected date of confinement, divided by the number of weeks for which contributions were paid.

(b) Maternity Grant

Payable to an insured woman or to a husband on the occasion of his wife's confinement if his wife is not entitled to the grant.

Conditions for

Eligibility: Not less than 50 contributions paid since the appointed day and 25 contributions paid in the 50 weeks immediately preceding the week in which the confinement occurs.

Amount of grant: $300 per child (payable only once in respect of any contribution year).

C. Retirement Benefit

(a) Retirement Pension

Retirement age: As from 60 years of age, and retired from insurable employment (last condition not required if insured person has attained 65 years). **New provision: Eligibility jointly with a survivor's pension.**

Contribution condition: 500 paid or credited weekly contributions, of which 150 have been paid.

Rate of pension: 30% of average insurable earnings plus 2% for each 50 contributions (excluding special credits) in excess of 500 up to 750; and 1% for each 50 contributions in excess of 750 (plus an overall 5% adjustment / to be deleted).

Average insurable earnings : Sum of weekly insurable earnings during the best three years in the last 15 years (or lesser period of contribution years if contributions not made for 15 years) divided by 150.

Minimum pension: $49.35 per week as from April 2016.

Maximum pension: 60% of average insurable earnings.

Retirement Grant

Payable to insured persons retiring after the age of 60 years and not qualifying for a retirement pension.

Contribution conditions: Not less than 26 contributions paid.

Amount of grant: Six times the average insurable earnings for each 50 contributions paid or credited, or 2½ times the sum of such earnings divided by the number of weeks of contributions for each unit of 50 such contributions.

Minimum grant: $800.

D. Invalidity Pension

(a) Invalidity Pension

Invalidity: Insured person under the age of 60 years who is incapable of work due to a specific disease or bodily or mental disablement which is likely to be permanent, and who has been incapacitated for not less than 13 consecutive weeks immediately preceding the week in which the benefit is claimed.

Contributions conditions: Not less than 150 contributions paid and not less than 110 contributions paid or credited in the last five years, and not less five contributions paid in the last 13 weeks.

Special credits: Claimant satisfying contribution conditions is awarded special credits equal to 25 contributions for each year between the age of the claimant and 60 years.

Rate of pension: If more than 500 contributions paid or credited, as for retirement pension; otherwise, 25% of average insurable earnings with 150 to 299 contributions plus 1% for each 50 contributions in excess of 299 up to 499.

Minimum pension: $49.35 per week as from April 2016.

Maximum pension: 60% of average insurable earnings.

(b) Invalidity Grant

Payable to an invalid person not qualifying for an invalidity pension.

Contribution conditions: Not less than 26 contributions paid.

Amount of grant: As for retirement pension.

Minimum amount: $800.

a. Funeral Grant

Qualifying conditions: Insured persons entitled to or in receipt of sickness or maternity benefit, or in receipt of, or satisfying the contribution for, a retirement or invalidity pension.

Contribution conditions: 50 contributions paid; 150 contributions paid in respect of Funeral Grant for deceased spouse and deceased dependent child.

Amount of grant: $1,500 deceased
$1,000 deceased spouse.
$ 500 deceased dependent child.

b. Survivor's Benefit

Survivor's Pension

Qualifying conditions: Deceased was in receipt of retirement or invalidity pension or would have been entitled to invalidity or retirement pension if he had become incapacitated or retired at the time of his death.

Qualifying conditions of Beneficiaries:

(a) Widow: On the date of her husband's death she was pregnant by the deceased or had the care of a child of his under 16 years of age, or on the date of his death she had been married to the deceased for not less than 3 years and

i) she is over the age of 50 or,
ii) she is permanently incapable of self-support and was wholly dependent on her deceased husband.

Period of Pension

During the period while she has the care of a child, and if aged 50 or over when she no longer has care of a child, for her lifetime thereafter or until remarriage. For one year if widow does not qualify for a longer period.

(b) Widower: Married to the deceased not less than 3 years, permanently incapable of self-support and wholly dependent on his deceased wife.

(c) Unmarried Child: Until 16 years of age, (or until 21 years, if receiving full time education, whichever is earlier.

(d) Invalid Child: Unmarried, permanently incapable of self-support and wholly dependent on the deceased.

Rate of Benefit: Widows and Widowers: 66%; each child 25%, or 40% if invalid; parents – 40%.

Minimum pension: $47 per week.

Maximum pension: 100% of the pension paid or payable to the deceased. Otherwise, each share is reduced proportionately.

(b) Survivor's Grant

Payable to beneficiaries if they are not entitled to pensions on the death of an insured person who satisfied the contribution conditions for a retirement or invalidity grant. The grant is payable in the same proportion as the survivor's pensions and the total amount of the grant is the same as the retirement grant.

7 Employment Injury Benefits

The following benefits are included:

- Injury benefit (temporary incapacity for work), including accidents occurring "to and from work".
- Disablement benefit (permanent disability).
- Medical care required as a result of employment injury.
- Constant attendance allowance.
- Survivor's pension and funeral grant.

Average insurable earnings: earnings for which the last four contributions have been paid divided by four (or two or three as the case may be).

No contribution conditions are required and the rates (or the amounts) of benefit are as follows:

a) Injury benefit: 80% of the average insurable earnings from the first day of incapacity up to maximum of 26 weeks.

Minimum pension: $49.35 per week.

Disablement benefit

- degree of disability 25% or more: Periodical payment equal to 60% of the average weekly insurable earnings times the degree of disability.
- degree of disability less than 25%: Lump-sum grant equal to 260 times the average weekly insurable earnings times the degree of disability.

Medical care: Provided free of charge in public or private facilities or abroad provided the Board give prior approval.

Constant attendance allowance: 25% of the amount of the disablement benefit for 100% disability, as per Section 21 of the Act and Section 45 of the Benefit Regulations.

Funeral grant: $1,500.

H. Non-Contributory Pensions

As from age 65 females, and age 67 males (as from December 2007), and meeting the conditions to qualify for pensions. Monthly amount of $100 increased from $75, as from November 2007.

ANNEX B

Glossary of Terms

Adapted from the ILO/ISSA publication "Actuarial Practice in Social Security", Plamondon, Drouin, Pérez Montás, etc. (2002)

Assessment of Constituent Capitals

A financial system applied to employment injury (EI) benefits under which the annual cost of the scheme is determined as the present value of all future payments relative to pensions awarded during that year. Under that system, a reserve is continuously maintained equal to the present value of pensions in payment. This is sometimes designated as "the terminal funding" system of finance.

Defined-benefit scheme

A scheme under which the benefit is a defined amount, which depends on the number of contributions or insurance years and on the amount of insurable earnings.

Defined-contributions scheme

A pension plan under which contributions are paid to an "individual account" for each participant. The retirement pension is "undefined" and is dependent on the capitalized balance and the value of annuities at retirement, usually through for-profit entities (financial institutions or insurance companies).

Financial system

The systematic arrangement for raising the resources necessary to meet the financial obligations of a scheme. This is an expression often used to refer to the selected method of financing long-term pensions under a defined-benefit scheme (pay-as-you-go, partial funding or full funding).

Level or average premium

A financial system based on a theoretical constant contribution rate that can be applied indefinitely or for the projection period. It is calculated by equating the present value of projected future contributions of active insured persons and new entrants, plus the value of existing reserves, to the present value of projected future benefit and administration expenses.

Pay-as-you-go rate (PAYG)

The ratio of the total expenditure of a scheme to the sum of insurable earnings of that scheme. The PAYG financial system is usually applied to short-term benefits.

Period of equilibrium

As stated below in "scaled premium system", in actuarial valuations of a national pension scheme, the period of equilibrium measures the number of years when reserves will be increasing. At the end of the period of equilibrium, income from contributions and investments equal benefit and administrative expenditure, according to the actuarial assumptions. Without an adjustment to the contribution rate, assets will need to be liquidated to pay current expenditure and reserves will begin to decrease.

Scaled premium system

A financial system for pensions under which contribution rates are increased throughout the life cycle of a pension scheme on a step-by-step basis (where the duration of each individual "step" is called the "**period of equilibrium")**. In a more narrow definition, the contribution rate is calculated for a defined period of years, that is, a "period of equilibrium" (which often ranges from ten to 25 years), with the objective of equating, at the end of the period of equilibrium, the income from contributions and the investment income to the expenditure on benefits and administration.

State Plan

A term used in accounting standards for a pension plan sponsored by a State or Government on a not-for-profit basis, and therefore with indefinite duration, as opposed to pension plans sponsored by an enterprise which can become insolvent if the enterprise fails.

Terminal funding

A financial system under which a premium equal to the present value of a pension is paid at the time the pension starts. The premium is set aside as a reserve to guarantee future benefit payments.

ANNEX C

WHITE PAPER ON THE WAGE BANDS

1. The legal provisions of the SSB drafted by an ILO consultant prior to the inception of the scheme stipulated contributions based at the middle-point of wage bands. The objective was to facilitate employers, who at that time managed payrolls by non-computerized tools, the assessment of contributions. At present, the wage bands system is deemed as obsolete and has been replaced by contributions based on actuarial earnings, **up to a ceiling.**

I. Increase in the Ceiling

2. The priority set of legal amendments include an adjustment to the outdated ceiling on contributions, which was originally set at $130 per week at the inception of the scheme in 1981, raised to $320 in 2001, and has remained frozen since then.

3. In principle, expanding the ceiling to approximately $500 per week has been under consideration. This would generate an inflow of contribution income, but also higher benefit expenditure, as the entitlement of new claimants with earnings above the present ceiling would also increase. Insured persons close to the normal retirement age would be able to access pensions based on the new ceiling for life, having paid updated contributions for only a few years, generating "wind fall" gains that should be moderated by transitory provisions. Very high increases on the ceiling ($800 to $1,000 per week), would have a negative incidence on employers' labour costs and cause a more in-depth incidence on "wind fall" gains, while adjustments to approximately $500 / $600 per week would meet the key objective of a national social security scheme to provide a "**basic level of social protection**". Additional coverage by high earnings individuals should be sought by complementary pension schemes.

4. The actuary considers an increase in the ceiling as a top priority, providing additional contribution income to allow an adequate financial development of the scheme until the 8% rate of contributions is increased early the next decade. It would address: i) the wide disparity between actual and insurable earnings for a large proportion of insured persons, and ii) provide also additional funds to meet the widening gap between contributions and expenditure. The latter the ceiling is increased, the less effective the transitional impact on the period of equilibrium.

II. Contributions and Benefits based on Actual Earnings versus Wage Bands

5. On the contribution side, the financial incidence would be significant only for insured persons on the present top wage band ($300 to $340 per week, with a $320 mid-point), as most insured persons would have earnings in excess of $340 per week.

6. Therefore, the new methodology should yield marginal higher contribution than under the present wage-band methodology only for the top wage-band. At the middle or lower wage bands the number of insured persons and the insurable earnings, rather than skewed towards the top range of the wage band, is spread on both sides.

7. The replacement of the wage bands by contributions (and benefits) based on actual earnings could take place concurrently or after the increase in the ceiling on contributions. If prior or concurrently, the need for additional wage bands up to the new ceiling would be avoided.

Contributions would then be based on actual insurable earnings (salaries or wages) up to the new ceiling. Under any of the alternatives above, a transitional phase should be provided for, to allow employers to adapt their payroll procedures (about six months).

8. It might appear that the adoption of contributions and benefits based on actual earnings rather than wage bands would imply a complex structural reform. On the contrary, it is a simple matter of assessing contributions, rather than at the midpoint of the $40 wage band, above or below the median, which would imply **lower** contribution by employers and employees with earnings below the midpoint, and **higher** contributions by those with earnings above the mid-point. As the maximum deviation on each side is of $20, the difference in contributions **would not be material and could be cost-neutral for many employers,** except for the top wage band ($300 to $340), with a skewed distribution on the high side. The maximum combined amount of additional contributions after the amendment **up to the present ceiling** is estimated at a maximum of 4% the total assessed contributions in 2016.

Distribution of Contributions (Employer / Insured Persons)

9. Due to the legacy incidence of a 6/1 ratio at the inception of the scheme, the financial structure of the scheme is borne mainly by the employer. It pertains to the stakeholders (Employers / Unions / Government) to address this issue once the contributory ceiling is increased, either under the wage band or percentage of earnings methodology. The actuary has submitted previously optional illustrative tables in that regard. (See attachment).

Table A

Substitution of the Wage Bands by Rates of Contribution as a Percent of Insurable Earnings

	Old Wage Bands	New Average Rate of Contribution		Total
		Employer	Employee	
1	110/139	5.50%	2.50%	8.00%
2	140/179	5.25	2.75	8.00
3	180/219	5.00	3.00	8.00
4	220/259	4.75	3.25	8.00
5	260/299	4.50	3.50	8.00
6	300/339	4.25	3.75	8.00
New	"Mid-range" rate			8.00
7	340/379	4.00	4.00	8.00
8	380/419	4.00	4.00	8.00
9	420/459	4.00	4.00	8.00
10	460/499	4.00	4.00	8.00
11	500 and over	4.00	4.00	8.00
a) Self-Employed	(with Employment injury and short-term benefits)[a/]			
Under $339	Variable by $1 band		7.00%	8.00
340 and over	Variable by $1 band		7.00%	8.00
b) Self Employed	(Only long-term benefits)[b/]			
Under $339			6.00%	6.00%
320 and over			6.00%	6.00%

[a/] Voluntary scheme probably actuarially insolvent. Coverage of EI benefits not appropriate.

[b/] No accrued liability for EI coverage of maternity benefit only to pregnant wife at the date of the amendments. Exclusion of housewives also effective on the date of the amendment.

Table B

Weekly Amount Payable by Employer / Employee

(Mid-Range of Insurable Earnings)

Average Weekly Wage (mid-range)	Employer	Employee	Total
130	$7.15	$3.25	10.40
160	8.40	4.40	12.80
200	10.00	6.00	16.00
240	11.40	7.80	19.20
280	12.60	9.80	22.40
320	13.60	12.00	25.60
360	14.40	14.40	28.80
400	16.00	16.00	32.00
420	16.80	16.80	33.60
460	18.40	18.40	36.80
500 +	20.00	20.00	40.00

ANNEX D

SELECTED STATISTICAL DATA AND SUMMARY OF THE LONG-TERM BRANCH PROJECTIONS

Active Insured Males (31.12.2017)

Age Group	Insured Persons	Annual Insurable Earnings
< 20	4,522	19,141,895
20-24	10,784	85,720,206
25-29	10,867	108,115,644
30-34	9,167	99,103,821
35-39	7,594	83,770,379
40-44	6,308	70,027,757
45-49	5,175	56,630,136
50-54	4,228	46,136,999
55-59	2,925	28,777,397
60-64	1,512	13,669,182
65-69	698	1,157,265
70-74	277	33,740
75-79	136	11,995
80-84	48	3,565
85-89	19	4,825
90-94	5	0
95-99		
TOTAL	**64,265**	**612,304,805**

Active Insured Females (31.12.2017)

1	*2*	*3*
Age Group	**Number**	**Annual Insurable Earnings**
< 20	2,227	7,533,991
20-24	6,730	49,416,090
25-29	7,287	71,733,312
30-34	6,349	67,089,151
35-39	5,354	58,437,871
40-44	4,433	48,482,333
45-49	3,404	38,008,379
50-54	2,407	26,278,308
55-59	1,414	13,512,185
60-64	533	5,189,523
65-69	185	337,050
70-74	63	2,320
75-79	24	0
80-84	5	0
85-89	2	0
90-94	1	0
95-99	0	1
TOTAL	**40,418**	**386,020,513**

PRESENT VALUE OF PENSION IN PAYMENT

(31 DECEMBER 2017)

				ACTUARIAL PRESENT VALUE		
CATEGORY	**NUMBER**	**MONTHLY AMOUNT**	**AVERAGE PENSION**		**DISCOUNT RATE**	
				3%	4%	5%
RETIREMENT	6,312	2,690,849	426	430,826,832	395,079,338	364,247,559
INVALIDITY	377	202,353	537	46,128,593	40,920,643	36,641,679
SURVIVORS	2,987	951,531	319	97,608,271	86,825,107	78,146,308
DISCAPACITY	471	113,410	241	25,100,240	22,232,678	19,904,902
DEATH (EI)	258	60,918	236	10,676,868	9,428,968	8,439,129
Total	**10,405**	**4,019,060**		**610,340,804**	**554,486,735**	**507,379,576**

A

BASIC PROJECTION (NO-AMENDMENTS)

STATUTORY CONTRIBUTION RATE (4.5%)

	2017	2020	2023	2026	2030	2040	2050	2060
Number Insured	104,683	109,465	113,453	117,586	123,333	138,958	156,563	176,398
Contributions (thousands BZ$)	46,467	49,995	54,988	60,480	68,665	94,306	129,523	177,891
Number of Retirement Pensions	6,322	7,424	8,717	10,236	12,681	21,660	36,999	63,199
Total Number of Pensions	**9,632**	**11,137**	**12,892**	**14,937**	**18,201**	**30,009**	**49,837**	**83,252**
Demographic Ratios a/	0.0920	0.1017	0.1136	0.1270	0.1476	0.2160	0.3183	0.4720
Total Expenditure (thousands BZ$)	**61,084**	**72,251**	**86,257**	**103,263**	**131,799**	**247,064**	**473,488**	**923,156**
PAYG Ratio b/	0.0592	0.0650	0.0706	0.0768	0.0864	0.1179	0.1645	0.2335
Reserve (Year-end)c/	**431,098**	**436,641**	**417,203**	**361,251**	**203,438**	**(843,312)**	**(3,305,524)**	**(8,710,914)**

a/ Pensioners / active insured in %
b/ Total expenses / insurable earnings, in %
c/ 5% nominal return

B

ALTERNATIVE PROJECTION (2.1)

CEILING OF $500 (1 JANUARY 2018)

	2017	2020	2023	2026	2030	2040	2050	2060
Number Insured	104,683	109,465	113,453	117,586	123,333	138,958	156,563	176,398
Contributions (thousands BZ$)	46,467	57,494	63,236	69,552	78,964	108,452	148,952	204,575
Number of Retirement Pensions	6,322	7,424	8,717	10,236	12,681	21,660	36,999	63,199
Total Number of Pensions	**9,632**	**11,137**	**12,892**	**14,937**	**18,201**	**30,009**	**49,837**	**83,252**
Demographic Ratios a/	0.0920	0.1017	0.1136	0.1270	0.1476	0.2160	0.3183	0.4720
Total Expenditure (thousands BZ$)	**61,084**	**78,032**	**93,294**	**111,842**	**142,995**	**269,046**	**517,095**	**1,010,333**
PAYG Ratio b/	0.0592	0.0702	0.0763	0.0832	0.0937	0.1284	0.1797	0.2556
Reserve (Year-end)c/	**431,098**	**426,392**	**383,587**	**301,996**	**109,290**	**(996,113)**	**(3,615,595)**	**(9,439,355)**

a/ Pensioners / active insured in %
b/ Total expenses / insurable earnings, in %
c/ 5% nominal return

C

SUMMARY OF THE DEMOGRAPHIC AND FINANCIAL PROJECTIONS (CEILING OF $500 + 10% 1.1.2020)

	2017	2020	2023	2026	2030	2040	2050	2060
Number Insured	104,683	109,465	113,453	117,586	123,333	138,958	156,563	176,398
Contributions (thousands BZ$)	46,467	91,991	101,178	111,283	126,343	173,524	238,323	327,320
Number of Retirement Pensions	6,322	7,424	8,717	10,236	12,681	21,660	36,999	63,199
Total Number of Pensions	**9,632**	**11,137**	**12,892**	**14,937**	**18,201**	**30,009**	**49,837**	**83,252**
Demographic Ratios a/	0.0920	0.1017	0.1136	0.1270	0.1476	0.2160	0.3183	0.4720
Total Expenditure (thousands BZ$)	**61,084**	**78,032**	**93,294**	**111,842**	**142,995**	**269,046**	**517,095**	**1,010,333**
PAYG Ratio b/	0.0592	0.0702	0.0763	0.0832	0.0937	0.1284	0.1797	0.2556
Reserve (Year-end)c/	**431,098**	**460,888**	**534,861**	**592,219**	**624,837**	**239,352**	**(1,590,129)**	**(6,345,345)**

a/ Pensioners / active insured in %
b/ Total expenses / insurable earnings, in %
c/ 5% nominal return