

12th Actuarial Review of the St. Christopher & Nevis Social Security Fund as of December 31, 2017

Final Report

March 12th, 2019

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Abbreviations and Acronyms

EIB	Employment Injury Benefits
GDP	Gross Domestic Product
ILO	International Labour Office
IMF	International Monetary Fund
ISSA	International Social Security Association
IW	Insurable Wages
LTB	Long-term Benefits
NIA	Nevis Island Administration
OECS	Organisation of Eastern Caribbean States
PAYG	Pay-as-you-go
PEP	People Employment Program
SKN	St. Kitts-Nevis
SKNSS	St. Kitts-Nevis Social Security
SS	Social Security
SSB	Social Security Board
SSF	Social Security Fund
STB	Short-term Benefits
TFR	Total Fertility Rate

Introduction

St. Christopher (St. Kitts) & Nevis Social Security (SKNSS) began operations in February 1978. Prior to this, a National Provident Fund system was in place. Social Security currently covers all employed and self-employed persons in the Federation and offers three main types of social security benefits – short-term benefits, long-term benefits or pensions and employment injury benefits. The system is financed by contributions which are levied on employment earnings up to a wage ceiling and are paid by employers, employees and self-employed persons. Surplus funds that are not yet needed to pay benefits are invested locally, regionally and internationally in various types of securities and properties.

This is the report of the 12th Actuarial Review of the Social Security Fund and, in accordance with Section 39 of the St. Christopher & Nevis Social Security Act, 1977, it is being prepared three years after the 11th Actuarial Review. This report is being prepared for the Board.

The main purpose of periodic actuarial reviews is to determine if the social security system in St. Kitts-Nevis operates on sound financial and actuarial bases and if it provides adequate and affordable levels of income protection. Where considered necessary, recommendations aimed at ensuring that these objectives can be achieved for current and future generations are made.

For this actuarial review, 60-year demographic and financial projections have been performed. It should be noted that these projections are dependent on the underlying data, methodology and assumptions concerning uncertain future events and that the outcomes and eventual experience will most likely differ, possibly materially, from that indicated in the projections. Therefore, in accordance with the Social Security Act, periodic actuarial reviews should be conducted. The next Actuarial Review of the Social Security Fund is due as at December 31, 2020.

Derek Osborne, Actuary, visited St. Kitts-Nevis in July and December 2018 and held discussions with the Chairman, Board and Management. We wish to thank Mr. Oscar Walters, Chairman, Mr. Elvin Bailey, Acting Director, Mr. Donovan Herbert, Manager Research & Statistics, and all other members of the Social Security Board and staff who assisted with this review.

All dollar amounts in this report are quoted in Eastern Caribbean (EC) dollars.

March 12th, 2019

Executive Summary

With over \$1.5 billion in reserves, approximately 15 times annual expenditure, the St. Kitts-Nevis Social Security Fund is currently in a strong financial position. And even though contribution income is no longer sufficient to meet total expenditure, investment income is expected to meet that shortfall for several more years. There are several risks, however, which if not addressed soon, could significantly affect the long-term sustainability of the Fund. These risks include unfavourable demographic shifts, a generous pension promise, poorly diversified investments, reduced investment returns, and high administration costs.

Social Security makes promises to former and current workers that extend beyond sixty years. It is therefore important that it is well designed, well governed and properly administered. Periodic actuarial reviews provide a comprehensive assessment of the current and projected state of the Fund. They also provide policy recommendations for changes designed to ensure that a suitable balance between benefit adequacy and financial sustainability is achieved for both current and future periods. This is the report of the 12th Actuarial Review of the Social Security Fund and has been conducted as at December 31st 2017. It covers the 3-year period 2015 to 2017.

Experience During The Review Period

During the review period the economy grew at an average rate of 2.6% and inflation averaged negative 0.8% per annum. Contribution income increased each year but its growth was outpaced by benefit expenditure resulting in total expenditure exceeding contribution income for the first time in 2017, the Fund's thirty-ninth year. Administrative costs continue to be excessive and although recommended in previous actuarial reviews, no reforms to the pension age and other pension provisions have yet been made.

In 2015 the St. Kitts-Nevis government restructured its debt as a means of improving its current finances and lowering its debt burden. The effect on the Social Security Fund was investment loss provisions of \$49.9 million and a significant reduction in yield and lengthening of the maturity period on \$41.5 million of Government bonds. In total, investment loss provisions and unfavourable debt exchanges affected approximately 8% of Fund assets. During the review period, most of the amounts previously provided for on CL Financial Group investments were recovered.

Overall, the fund experienced surpluses each year and at the end of 2017, reserves totalled \$1.48 billion.

Assessment of Current Policy Provisions

This report's assessment of policy and design indicators suggests that current contribution and benefit provisions provide an adequate level of benefit and income protection to most workers and pensioners. The wage ceiling currently covers the wages of approximately 94% of workers and thus provides full income protection to most. Although pensions are adjusted periodically, no adjustment is necessary as retail prices have generally decreased since the last adjustment in mid-2014.

Projection Results

For this Review three sets of 60-year projections of the St. Kitts-Nevis population and social Security Fund finances have been performed. Given the uncertainty in projecting such an extended period, the timing of certain events and the rates that will apply are presented as ranges. These projections are based on there being no changes to the current contribution rate (11%) and current benefit rules. Following are key results from *Best Estimate* and two alternate scenario projections:

- Total expenditure will exceed contribution in each year.
- Total expenditure will exceed total income between 2022 and 2026.
- The Fund will be depleted between 2036 and 2041.
- The pay-as-you-go rate, or the rate required to produce just enough contribution income to meet total expenditure when the Fund is depleted, will be between 25% and 27%.
- The pay-as-you-go rate in 2077 will be between 36% and 40%.
- The average long-term cost of benefits over the next 60 years, often referred to as the general average premium, is between 25.5% and 33.2%.

These results are slightly less favourable than those of the 11th Actuarial Review even though the population and economic forecasts are more optimistic. The main reason for this is the lower assumed rate of return on investments.

A sustainable national pension system is one that over the long term, delivers on its financial promises in such a way that the financial burden is borne fairly equitably by participants. Under this definition, these results indicate that the Social Security Fund is not financially sustainable over the long term at the current contribution rate and pension provisions, as future generations will be required to contribute substantially more than previous and current generations. The projection results described above, however, are consistent with the partially funded nature of a national pension system, the contribution rate and pensionable age of 62 that were initially established.

Recommendations

The many recommendations made throughout this report are summarised below. These recommendations are in keeping with the primary objectives of Social Security, which are, to consistently deliver on its promises and maintain a suitable balance between long-term sustainability and benefit adequacy. Foremost among these recommendations is the creation of policies dealing with benefits and funding, and amendments to the existing Investment Policy.

1. Funding (Contribution) Policy and a Benefits policy – explicit documentation of what the SKNSS seeks to accomplish, what circumstances it wishes to avoid and where objectives conflict, what are its priorities.
 - a) The Funding Policy will include when and by how much the contribution rate should be increased as well as the maximum contribution rate policymakers consider acceptable.
 - b) The Benefits Policy will also include items such as whether certain benefits are amended or pension increases not granted if experience is unfavourable and the projected outlook is worse than previously expected.
2. Pension reform aimed at enhancing long-term sustainability while maintaining benefit adequacy should occur soon. While specific reforms should be driven by the Funding and Benefits policy that would be created as part of pension reform discussions, specific changes to Age pension provisions that should be considered are:
 - a) Increasing pensionable age gradually from 62 to at least 65 starting no later than January 2020, keeping age 62 available for payment of a reduced pension.
 - b) If below pensionable age, award Age pension only if the claimant is substantially retired.
 - c) Increase the number of years over which insurable wages are averaged when calculating pensions from three to at least five.
 - d) When pensions are next adjusted, apply the increase to all pensioners, including those who were initially awarded the maximum 60% pension replacement rate.
 - e) Place in regulations provisions for the award of Age/Invalidity and reduced Survivors pensions to widow(er)s who meet the eligibility conditions for both pensions.
3. For the Investment Policy, revise target asset allocations so that they are consistent with the prevailing investment climate and short to medium-term cash flow needs of the Fund. Specific recommendations for investment diversification include:
 - a) At least 20% overseas;
 - b) No more than 20% in certificates of deposit;
 - c) No more than 40% in SKN public sector securities; and
 - d) No more than 15% in domestic real estate.
4. Establish a set of good governance guidelines tailored specifically for the Social Security Board. Good governance practices that see Government, the Board and senior management

each accountable and transparent in their actions will positively influence the timing of pension reforms, increased investment diversification as well as prudent and responsible decision making.

5. Other recommendations:

- a) Take steps to improve contribution compliance.
- b) Implement new ways that will allow self-employed persons to more easily make SS contributions.
- c) Reduce administrative costs and set specific 5 and 10-year targets for expense ratios.
- d) Invest in new information technology systems and/or upgrade current systems so that service and efficiency levels may be improved.
- e) Consider the implementation of an unemployment benefit. This could be either funded with additional contributions or by excess funds from the National Provident Fund.
- f) Become an active participant in analysing the feasibility of introducing a system of national health insurance.
- g) Revise the contribution allocations between branches and transfer of reserves from the STB and EIB branches to the LTB Branch.

The long-term sustainability of the SS Fund requires maintaining a system that all stakeholders can count on to evolve and adapt to changing circumstances, at a cost that is both affordable for current and future generations. The future is uncertain, and as recent experience in both St. Kitts-Nevis and elsewhere in the region has shown, changes could be sudden and significant. Since a desirable outcome cannot be guaranteed, the Board and all stakeholders should plan for and manage risk proactively. Comprehensive pension reform in which all stakeholders are actively engaged is an ideal opportunity to begin this process.

Chapter 1 Experience Since 11th Actuarial Review

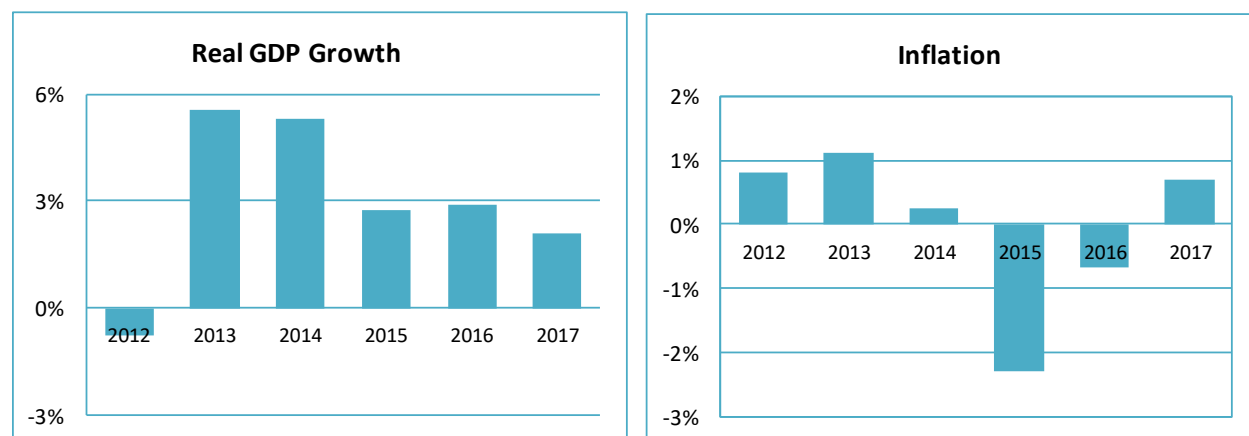
1.1 Amendments To Act & Regulations

The 11th Actuarial Review of the Social Security Fund was conducted as of December 31st, 2014. No amendments were made to the Act or Regulations during the Review period.

1.2 Economic Experience

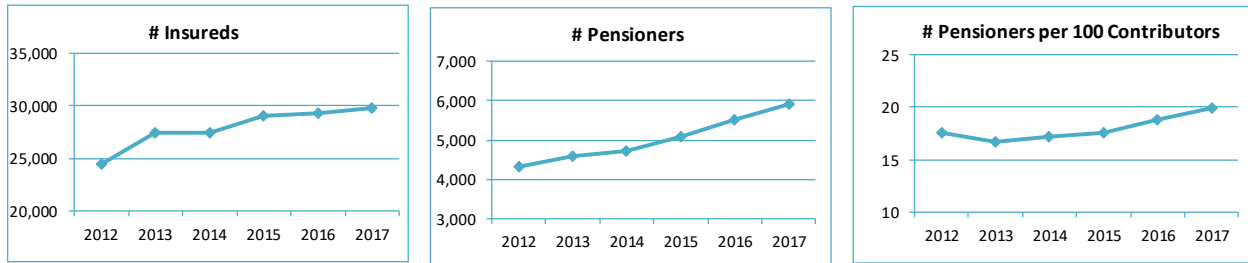
Contribution income is closely linked to economic performance and labour market changes. Some benefits are also affected by economic changes. As shown in the charts in Figure 1.1, real GDP growth has been strong since 2013. During the actuarial review period the economy grew at an average rate of 2.6% per annum. Inflation during this period was very low, averaging negative 0.8% per annum.

Figure 1.1. GDP Growth & Inflation, 2012 to 2017

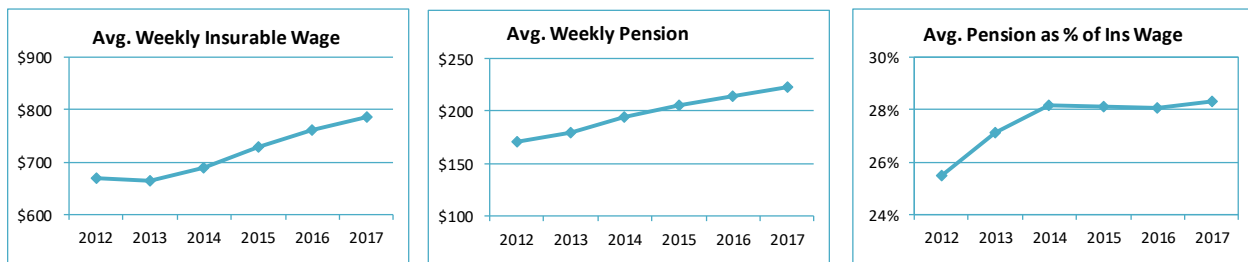


1.3 Social Security Fund Experience

In line with changes in economic activity, the number of contributors increased each year. (Figure 1.2 below) As expected, the number of pensions in payment also increased each year. With the number of pensioners increasing at a faster rate the number of contributors, the demographic ratio (number of pensioners per 100 contributors) increased from 17.2 to 19.9 between 2014 and 2017.

Figure 1.2. Contributors & Pensioners, 2012 to 2017

Both the average insurable wage and the average pension in payment increased between 2014 and 2017, (Figure 1.3 below). There were no general pension increases during the review period. Average pensions divided by average insurable earnings is often referred to as the replacement ratio. This ratio remained relatively unchanged (from 28.2% to 28.3%) between 2014 and 2017 indicating that average pensions grew at approximately the same rate as average insurable earnings.

Figure 1.3. Average Insurance Wages & Pensions in Payment, 2012 to 2017

The following table provides summary income and expenditure amounts for 2015 to 2017. A more detailed version of the Social Security Fund finances for these years may be found in Appendix D.

Table 1.1. Summary of SSF Finances, 2015 – 2017 (millions of \$'s)

	2015	2016	2017
Income			
Contributions	90.6	94.2	94.7
Investment	56.6	51.8	48.7
Other	2.3	0.7	0.7
Debt & Investment Recoveries	3.5	12.8	-
Total	153.1	159.6	144.2
Expenditure			
Benefits	67.3	75.2	83.7
Administrative	14.4	14.1	14.2
Impairment Provisions & Revaluation Losses	29.2	15.9	1.4
Total	111.0	105.2	99.3
Excess of Income over Expenditure	42.1	54.4	44.9
Other Comprehensive Income	(0.9)	3.2	14.2
Reserves^ (end-of-year)	1,365.3	1,422.9	1,482.0

Totals may be off due to rounding.

^ Includes reserves allocated to the three benefit branches plus Revaluation Reserve. NPF Fund and Staff Supplemental Plan Reserves are excluded.

Highlights of income and expenditure are:

- Contribution income increased in line with growing economic activity.
- Investment income declined each year as interest rates offered on short-term fixed deposits, in where most of the Funds assets are invested, declined.
- Benefit expenditure increased each year as expected.
- Administrative costs remained relatively constant.
- In 2015 there was a large loss on revaluation of several properties as well as provisions for losses on deposits and impairment of debt. In 2016, there were further provisions for impairment on debt and loans to statutory bodies.
- During 2015 there was a \$5.0 million debt recovery from Bank of Commerce and in 2016, there was full settlement of the \$12.8 million invested with CLICO that was previously provided for.

1.4 Benefit Branches & Other Reserves

While the summary of SKNSS finances presented in the previous section shows total income and expenditure, internal accounting procedures separate finances into three branches representing the three major types of social security benefits – long-term or pensions, short-term and employment injury benefits. Each benefit is allocated to one of the three branches and each benefit branch is allocated a certain percentage of contribution income, investment income and administrative costs. Since the benefit types have different characteristics and financing mechanisms, the separation allows for better monitoring of experience. The existence of branches does not, however, affect the overall financing or sustainability of the Fund.

The financial experience of each branch and detailed benefit experience for 2015 to 2017 may be found in Appendix E.

The Social Security Fund also comprises three non-benefit reserves as described below.

Table 1.2. Non-Benefit Reserves

Reserve	Description	Dec. 2017 (in millions)
Revaluation Reserve	Cumulative gains and losses on revaluation of freehold properties and investments designated as “available for sale”. In 2017 there was \$14.2 million unrealised holding gain.	\$30.1
National Provident Fund (NPF) Reserve	Accumulated NPF balances less members’ claims settled.	\$30.1
Staff Supplemental Benefit (SSB) Reserve	Assets of the Staff Pension Plan	\$10.4

For the analysis and projections of this actuarial review, NPF and SSB Reserevs are exlcuded.

1.5 Experience Compared With Projections Of 11th Actuarial Review

Shown below is a comparison of actual cumulative experience over the 3-year review period with the projections of the *Best Estimate* scenario of the 11th Actuarial Review.

Table 1.3. Projections from 11th Actuarial Review Compared With Actual Experience

	2015-2017 Projected (millions of \$'s)	2015-2017 Actual (millions of \$'s)	% Difference
Contribution Income	274.2	279.6	2% above projected
Investment Income	155.4	157.1	1% above projected
Benefit Expenditure	226.8	226.2	As projected
Administrative Expenditure	43.7	42.7	2% below projected
2017 Year-end Reserves	1,485	1,482	As projected
Reserve-Expenditure Ratio (end of period)	15.1	15.1	As projected

As shown above, actual income, expenditure and reserves over the review period were generally in line with projections. The net difference between provisions made, recoveries and unrealised gains was a positive \$2.1 million.

1.6 Investments

At the end of 2017, Social Security Fund investments (cash excluded) stood at \$1.44 billion, up from \$1.27 billion at the end of 2014. Social Security Fund investments are approximately 54% of GDP.

The relationship between investments and reserves, which measures how efficiently available funds are invested, averaged over 96% over the 3-year review period. This is very good.

During the review period, the average yield on investments was 4.0% and the average yield on reserves was 3.8%. With inflation averaging -0.8% per annum, the average real rate of return on reserves was 4.6%.

The following table provides a summary of the investment mix of the Social Security Fund at year-ends 2017 and 2014.

Table 1.4. Summary of Investments, Year-end 2017 & 2014 (\$'s in millions)

Investment Category	2017		2014	
	\$'s	%	\$'s	%
Certificate of Deposit	990.0	68.8%	840.7	67.6%
T-Bills & Bonds	58.9	4.1%	53.5	4.3%
Loans	177.0	12.3%	164.1	13.2%
Equities	77.0	5.4%	45.5	3.7%
Real Estate	135.5	9.4%	140.7	11.3%
Total	1,438.4	100%	1,273.2	100%

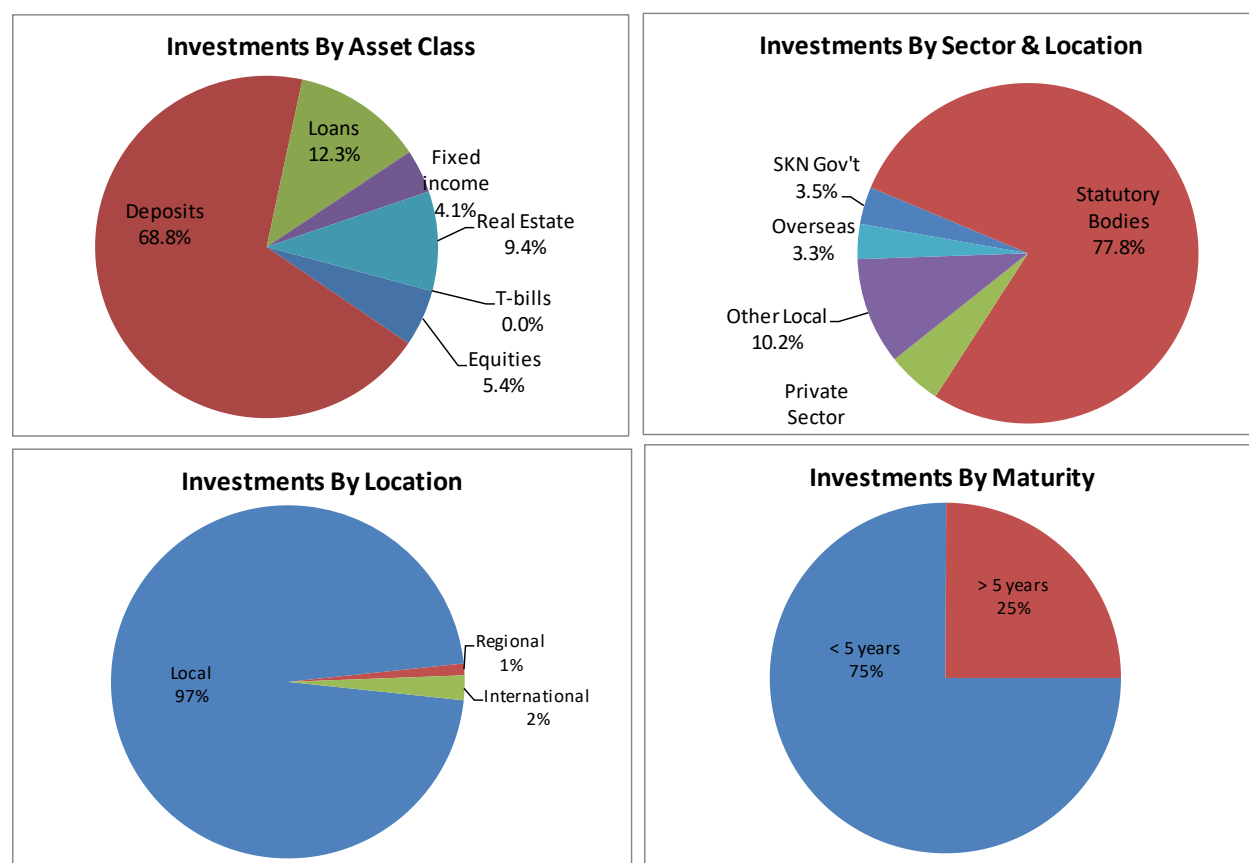
During the review period total investments increased by \$188.8 million, mostly in certificates of deposits and equities.

In 2015 the Government restructured its sovereign debt. The restructuring included haircuts on principal, extended maturity dates and reduced yields. For Social Security, this restructuring also affected loans to the Nevis Island Administration and Statutory Corporations. Below is a summary of the debt exchange and investment loss provisions made:

- i. Bonds totalling \$41.572 with maturities of 10 and 12 years and interest rates of 7.5% and 8.5% respectively, were retired and exchanged for a 45-year bond with the same face amount but interest rate of 1.5% per annum.
- ii. Loans to the Nevis Island Administration and Statutory Bodies totalling \$26.9 million were restructured resulting in a loss provision of \$9.3 million.
- iii. Loans to St. Kitts Statutory Corporations totalling \$179.5 million were restructured resulting in a loss provision of \$40.5 million.

When CLICO and BAICO were placed under judicial management in 2009, Social Security held combined investments of \$15.4 million in deposit-type instruments. These were fully provided for. As of December 2017, all CLICO deposits were recovered and \$2.3 million remains uncollected in respect of BAICO.

Diversification is a critical component in the investment of Social Security Funds. How well investments are diversified can be assessed using four criteria:- across various asset classes, across maturity dates, across different locations and by issuer of the underlying securities. The following charts illustrate the diversification of SSF investments as of December 2017.

Figure 1.4. Investments, December 2017

Analysis of the asset mix, with specific emphasis on diversity, shows that:

- By asset class: inadequately diversified with two-thirds in cash and deposits.
- By issuer: inadequately diversified with over 80% backed by local public sector entities.
- By location: inadequately diversified with only 3% outside of St. Kitts-Nevis.
- By maturity: Significant mismatch between the (short) maturities of most investments and the long-term nature of Fund liabilities, with no short-term need to liquidate assets.

SSF investments are guided by an Investment Policy Statement (IPS) which was last revised in 2014. This Policy sets out investment objectives and guidelines for the Fund and defines the management structure and monitoring procedures for both internal and external investment management. It also includes a desired asset allocation policy for the Fund.

The following table shows the asset mix at December 31, 2017 compared with the acceptable ranges found in the IPS. As shown, holdings of all but one asset class (real estate) are outside the desired target allocation. The Board should therefore take immediate steps to review the desired mix in the Investment Policy in line with prevailing investment opportunities and rebalance investments to achieve a more diversified and lower risk portfolio.

Table 1.5. Actual Asset Mix Compared With Investment Policy Targets, December 2017

Investment Class	Actual	Target Allocation	Variance
Treasury Bills	2.1%	5% - 10%	Below
Certificate of Deposit	68.8%	40% - 50%	Significantly above
Government Securities	3.5%	20% - 30%	Significantly below
Corporate Securities	0.2%	5% - 15%	Significantly below
Equities	5.4%	10% - 20%	Significantly below
Real Estate	9.4%	10% - 20%	Slightly below
Other Investments [^]	12.3%	5% - 10%	Significantly below

[^] Only loans included

It should be noted that the above classifications are not mutually exclusive as Treasury Bills are also Government Securities. When next revised, the names attached to assets classes should be reviewed.

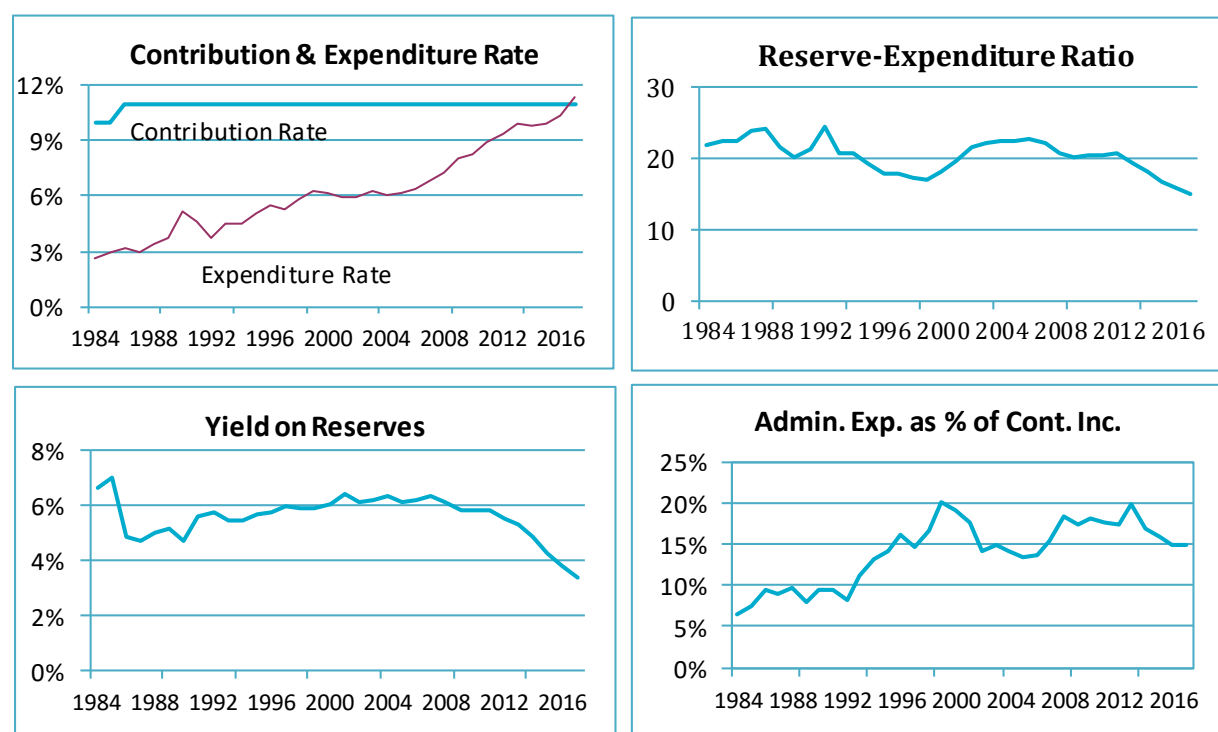
Chapter 2 Performance & Design Assessment

Social security systems must balance benefit adequacy with affordability and long-term sustainability. There is an obvious trade-off between these concepts:- higher benefits provide larger incomes to beneficiaries but cost more, while inadequate pensions result in pressures to increase benefits or add new ones. This Chapter analyses past trends for key financial indicators and current design parameters, and examines how well key policy objectives are being met.

2.1 Historical Performance, 1984 – 2017

Experience for key financial factors from 1984 to 2017 is presented in the following charts:

Figure 2.1. Social Security Board Financial Experience



As a partially funded social security system matures total expenditure as a percentage of insurable wages gradually increases. In 2017, total expenditure exceeded contribution income for the first time and a small portion of investment income was used to cover costs. The size of the reserves relative to annual expenditure decreased sharply in the valuation period. (top right chart). As the size of the Fund grows, the rate of return becomes more critical to enhancing

long-term sustainability. Rates of return exceeded 6% for many years but have fallen below 4% in recent years.

After several years of being relatively steady, administrative costs as a percentage of contribution income increased during this review period, reaching close to its highest point in Fund history.

Following are values for several key indicators as of the dates of the 10th, 11th and 12th Actuarial Reviews along with a brief analysis of the changes that have occurred.

Table 2.1. Social Security Performance Indicators

	2011	2014	2017	Comments
1. Contribution Rate (private)	11.0%	11.0%	11.0%	Unchnaged since 1986
2. Expenditure Rate	8.9%	9.8%	11.4%	Gradually increasing as expected
3. Benefits as % of GDP	2.0%	2.4%	3.1%	Gradually increasing as expected
4. Reserve-Expenditure Ratio	20.6	18.0	15.1	Gradually declining as expected
5. 3-year average nominal yield on reserves	5.8%	5.3%	3.8%	Returns delcining in line with short-term interest rates
6. 3-year average real yield on reserves (net of inflation)	2.6%	4.5%	4.6%	High in recent years due to low and negative inflation
7. Administrative Expenses (3-yr average) as:				
1. % of Contributions	17.6%	16.8%	15.0%	Gradually decreaisng as operational activity increases
2. % of Conts. + Benefits	10.7%	9.8%	8.0%	
3. % of Insurable Wages	1.9%	1.9%	1.6%	
8. # of Contributors Per Pensioner	6.1	5.8	5.0	Gradually declining as expected
9. Avg. Pension as % of Avg. Insurable Wage	24.4%	28.2%	28.3%	Little change in last period due to increases in average wages

These indicators are generally consistent with expectations of a maturing social security fund and economic conditions between 2014 and 2017.

2.2 Meeting Policy Objectives

The rules and the amounts, at which key parameters are set, determine benefit adequacy. How well certain rules are enforced, and how well the system is managed, also impact how well policy objectives are met. To determine how well these objectives are being met, and how likely they are to be met in the future, an analysis of current contribution and benefit provisions, key rates and parameters as well as actual performance indicators have been reviewed. While some mention is made of Short-term benefits, this analysis focuses primarily on pensions which accounted for 82% of SSF benefit expenditure in 2017.

2.2.1 Coverage

With SS participation mandatory for all employed and self-employed persons, coverage concerns relate to actual participation rates by formal and informal sector workers, and the proportion of elderly residents receiving a SS pension. The following three estimates for 2017 provide a fairly good analysis of current coverage levels:

(a) % of workers (employed & self-employed) contributing to SS	>90%
(b) % of contributors that have their wages fully covered by SS	94%
(c) % of elderly resident population who receive a SS pension	Approx. 80%

The first two indicators above show that most workers in St. Kitts-Nevis made at least one contribution during the year and that all but 6% earn less than \$6,500 per month. This level of coverage is very good and current wage ceiling is at an adequate level.

With approximately 80% of the elderly resident population receiving a pension from SS, the objective of providing a reliable source of income in old age is being met.

2.2.2 Adequacy

Benefit adequacy relates to the ability of benefits, especially pensions, to provide a decent standard of living when employment income is disrupted. Benefit adequacy can be broken down into two components:

- (a) Current adequacy: Are pensions adequate today?
- (b) Future adequacy: Under current provisions, will the pension be adequate in the future?

Current Adequacy

The minimum contributory pension is currently \$430 per month having been increased from \$400 in July 2014. Cumulative price inflation since then has been negative. \$430 per month is approximately 14% of the average insurable wage. This is slightly low. (15% is considered acceptable)

For pensioners receiving more than the minimum, their pension replacement rates are initially between 30% and 60% of their final average insurable wage, lower for the small percentage of very highly paid persons. This replacement level is considered adequate.

Future Adequacy

A worker who has steady earnings below the wage ceiling and contributes to SS for a full career, sustaining him/herself predominantly from his employment earnings, can expect a pension of close to 60% of pre-retirement earnings. By ILO and other international standards this is adequate and thus meets any reasonable test of benefit adequacy for a social security pension. The challenge quite often, especially for the self-employed, is that many workers do not have steady wages and do not consistently work and contribute for 35 years.

The ceiling has been fixed at \$6,500 where around 94% of workers are fully covered. Given that neither wage ceiling nor pension adjustments are automatic there is some uncertainty re future benefit adequacy. While no ceiling adjustment for an extended period will have an effect on the ultimate pension replacement rate of higher income workers, not increasing pensions periodically will result in a gradual decline in the purchasing power of these pensions.

Social security pensions are not intended to provide all of the income required to support oneself in old age. Based on the above, current contribution and benefit provisions provide pensions in old-age that meet reasonable tests of future benefit adequacy.

When non-pension benefits are considered, the various short-term benefits provide income protection for almost all contingencies that could lead to involuntary loss of employment income. The only contingency not currently provided for is involuntary unemployment.

2.2.3 Financial Sustainability

Assessing the sustainability of a national pension system is complicated. Given the perpetual nature of these systems, some of the rules that apply to private pensions systems are not appropriate. Therefore, whether current reserves plus future contributions at the current contribution rate are sufficient to meet future expenditure should not be used to determine long-term sustainability. Instead, assessing sustainability involves looking at the cost of the system now and in the future, and considering whether or not employers and workers in the future will be able to afford the cost. A definition of financial sustainability that has become

widely used in social security discussions is whether the pension system is able to meet the needs of current generations without compromising the needs to future generations.

By design, the SSF is partially funded and the current contribution rate and accumulated reserves are expected to be adequate to meet all obligations for approximately 20 more years. Now that contributions alone are no longer sufficient to meet expenditure, increasing portions of investment income will be needed to pay benefits and then eventually investments will have to be liquidated. This is a natural progression for partially funded national pension systems.

It is not possible to determine today the highest contribution rate that workers and employers will be able to afford, or willing to pay, twenty to thirty years from now. With reserves not growing as fast as they have in previous years, and reduced rates of return on investments in this new low interest rate environment, contributions will have to account for the greater portion of future Fund income.

Based on regional and international comparisons the SKNSS provides a generous benefits package for a moderate contribution rate and thus its financial sustainability may come into question. The key challenge for current and future Boards and governments regarding financial sustainability is determining when will be the right time to increase the contribution rate and/or reduce benefit promises. Reforms to benefits have been discussed but not yet implemented.

2.2.4 Administrative Efficiency

An average of 15.3% of contribution income, 8.5% of contributions plus benefits, or 1.7% of insurable wages, was spent on operating expenses over the three-year review period. Compared with other social security funds in the OECS and the wider Caribbean this is high.

Regarding effectiveness of its operation, it appears that the Board performs reasonably well at collecting contributions and adjudicating claims and paying benefits in a timely manner. Both cost savings and improved performance could however be achieved if greater use were made of available technology.

Recommendations relating to each of these national pension policy objectives are presented in Chapter 5.

2.3 Comparisons With Other OECS Countries

Even within the OECS, it is difficult to compare social security schemes given the special peculiarities of each country's system, history and economy. For example, the age of the scheme affects its current financial state as does the level of the initial contribution rate and reforms made since inception. The following tables highlight the similarities and differences of the SKNSS with other social security schemes in the OECS in several key areas.

Table 2.2. SKNSS Compared With Other SS & NIS Systems in the OECS

Contribution rate (private employees)	The 11% rate is third highest to Dominica (12.85%) and Antigua-Barbuda (12.5%). 10% is the combined contribution rate in St. Lucia and St. Vincent, while Grenada and Montserrat are at 9%.
Wage ceiling	At \$6,500 per month, St. Kitts-Nevis and Antigua-Barbuda are the highest after Anguilla (\$7,000); followed by Dominica (\$5,055) and St. Lucia (\$5,000).
Benefits Package	Slight differences only.
Pension Age	Only Grenada (60) and St. Kitts-Nevis (62) still have the original pensionable age. St. Lucia reached age 65 in 2015 and all others are gradually increasing to 65.
Pension Accrual rates	With the exception of Antigua-Barbuda (50%), all others have a maximum pension of 60% of average insurable wages. The accrual rate after 10 years is 30% in most (25% in Montserrat)
Investment Mix	SKN has the least diversified portfolio - much lower portion overseas (both regionally and internationally) than most others and higher concentration of short-term deposits than others.
Administrative Costs	Highest among those with publicly available information (See Section 5.4)

Table 2.3. Recent Social Security Reforms in the Caribbean

Reform	Country	Comments
Increasing pensionable age to 65	Antigua-Barbuda, Dominica, Montserrat, St. Vincent	Barbados is now at age 67
Revised formula for pensions	Dominica, Montserrat, St. Vincent	Accrual rates & final average wages
Contribution Rate increase	Single increases in Antigua-Barbuda & SVG, annual adjustments in Dominica	In Dominica, ¼% per year for 20 years will see rate move from 10% to 15%
Automatic ceiling & pension increases	BVI, Bahamas, Barbados	Every year in BVI & Barbados, every second year in The Bahamas
Unemployment benefit	Bahamas (2009)	Only other country with this benefit is Barbados

Chapter 3 Best-Estimate Projections

Many demographic and economic factors, such as changes in the size and age structure of the population, economic growth, employment and wage levels and inflation, influence Social Security Fund finances. Therefore, to best assess the Fund's long-term costs and sustainability, projections of St. Kitts-Nevis's total population and the economy are required. For this review 60-year projections have been performed.

In developing the assumptions used for the projections, historical trends and reasonable future expectations, as well as the interrelationships between the various assumptions, have been taken into account. Core projections have been performed using assumptions that reflect best estimates. The demographic and financial projection results based on this assumption set are referred to throughout this report as "Best Estimate."

3.1 Population Projections

St. Kitts-Nevis has experienced net out-migration for decades but with increased economic activity in recent years, outward migration has slowed. Fertility rates remain relatively steady at well below replacement rate. Excluding violent deaths, primarily among young males, life expectancy continues to increase.

Projection Assumptions

Projections of St. Kitts-Nevis's population begin with the results of the 2011 census and in each projection year thereafter, fertility, mortality and migration assumptions are applied. Fertility rates are used to estimate the number of births each year while mortality rates determine how many, and at what ages, people are expected to die. Net migration represents the difference between the number of persons who permanently enter and leave St. Kitts-Nevis, and is the most volatile of the three factors. The 2011 population census placed St. Kitts-Nevis's population at 47,195.

The total fertility rate (TFR) represents the average number of live births per female of childbearing age in a particular year. If there is no migration, a TFR of 2.1 is required for each generation to replace itself. St. Kitts-Nevis's TFR was estimated at between 1.6 and 1.7 over the period 2014 to 2017. For these projections it is assumed that TFR's in St. Kitts-Nevis will be constant at 1.65.

The United Nations Latin America life table and the number of deaths in the past few years suggest life expectancy at birth in 2017 of around 70 for males and 75 for females. Improvements in life expectancy are assumed to occur in accordance with UN estimates.

The third factor that affects population size is migration. This is the most volatile and most difficult to measure. Population estimates prepared by the Central Statistics Office suggest that between 2011 and 2017, net outward migration averaged around 30 per annum, down from approximately 250 during the inter-census period 2001 to 2011. For this report, net inward migration is assumed in the latter half of the projection period.

The economic assumptions used for this report assume stable and positive economic growth and labour productivity in all years. Although simplistic, they approximate usual economic cycles and volatility that encompass periods of expansion and recession. They also account for projected changes in the population and labour force that will provide the capacity for additional output through more workers and increased productivity (real wages).

The following table indicates the principal demographic and economic best-estimate assumptions for this and the previous Review. Further details may be found in Appendix B.

Table 3.1. Principal Demographic & Economic Assumptions

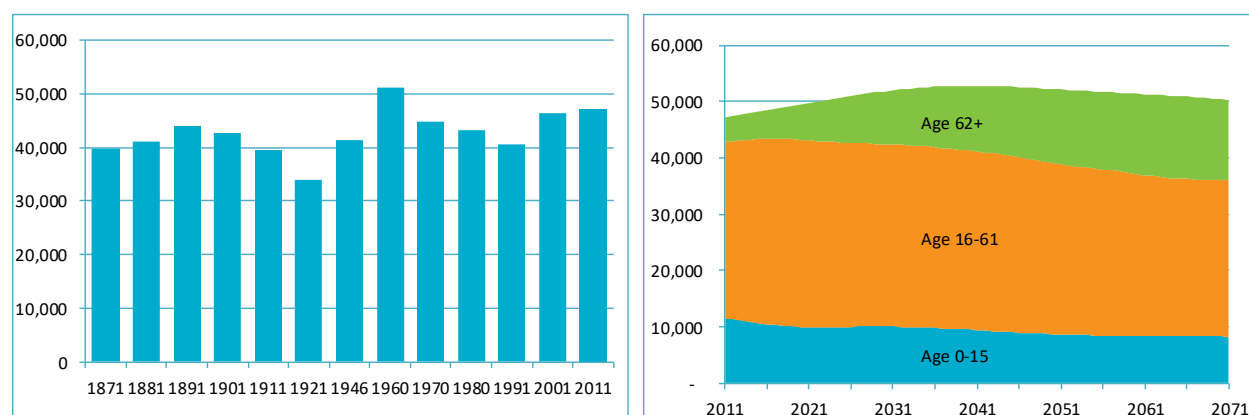
		12 th Actuarial Review	11 th Actuarial Review
Total Fertility Rate		1.65 in all years	1.65 in all years
Mortality Improvements [^]		Slow	Slow
Net In-Migration Per Annum		-50 in 2011 decreasing to 0 in 2021, then increasing to 25 in 205 then to 100 in 2065	-250 between 2014 and 2015, decreasing to -100 in 2025, then 50 in 2045
Real GDP Growth Rates	Short-term (from IMF)	3.5%, 3.2%, 3.0%, 2.7%, 2.7% (2018 to 2022)	2.0%
	2023 to 2033	2% declining to 0.75%	1.5%
	After 2033	0.75%	1.0%
Real Increase in Wages		0.75%	0.80%
Long-term Inflation		2.00%	2.25%

[^] UN mortality improvement rates

3.1.1 Projection Results

The 2 charts in Figure 3.1 illustrate St. Kitts-Nevis' population from 1871 to 2011 and the projected population under the assumptions presented above. From the 2011 Census population of 47,195, and with the above assumptions, St. Kitts-Nevis's population is projected to increase over the next 20 to 25 years and then gradually decrease. These projections show a slightly larger population than estimated in the 11th Actuarial Review.

Figure 3.1. Historical & Projected St. Kitts-Nevis Populations



Numerical details of these projections may be found in Appendix C.

It should be noted that the projections presented in this report have been prepared for the sole purpose of determining the implications for SSF finances.

For the SSF, while projected future population size is important, the age distribution is more critical, as pensions to the elderly represent the bulk of expenditure and contributions will be paid by those of working-age. As shown above, while the number of children and working-age persons is projected to decrease over time, the elderly population is expected to increase significantly.

3.2 Social Security Fund Projections

Best Estimate Social Security Fund demographic and financial projections have been modeled using the best-estimate population results, best estimate SS-specific assumptions and the contribution and benefit provisions that were in place on January 1, 2018.

3.2.1 Assumptions

Key Social Security assumptions are shown below.

Table 3.2. Social Security *Best Estimate* Assumptions

	12th Review	11th Review
Avg. Contribution Rate	11.0%	11.0%
Insurable Wage Ceiling	To \$7,000 per month in 2023 then increases by change in average wages	To \$7,000 per month in 2020 then increases by change in average wages
Short-term Benefits as a % of Insurable Wages	Increasing from 1.55% to 1.6% of IW over 10 years	Increasing from 1.4% to 1.5% of IW over 10 years
Employment Injury Benefits	Increasing from 0.07% to 0.12% of insurable wages over 10 years	Increasing from 0.08% to 0.12% of insurable wages over 10 years
Pension Increases	6% average in 2020 then annually by inflation starting 2018	6% average in 2017 then annually by inflation starting 2018
Long-term Yield on Reserves	3.0%	3.5%
Admin. Expenses as a % of Insurable Wages	Decreasing from 1.6% to 1.5% of insurable wages over 10 years	1.85%

It should be noted that the rates in the above table are not targets which the SS should aim to achieve but instead are the assumptions on which the projections are based.

By assuming that the wage ceiling and pensions in payment will be increased periodically in line with inflation, it is being assumed that the prevailing level of coverage and income security made possible by the ceiling and minimum pension will be generally maintained throughout the remainder of the projection period.

3.2.2 Projection Results

For this report, the projections for the three benefit branches are combined. Reserves as of December 2017 were \$1.48 billion. The charts in Figure 3.2 highlight key projection results of the *Best Estimate* scenario assuming that the contribution rate remains at 11% and that there are no changes to benefit rules.

Figure 3.3. SSF Projections – Best Estimate Scenario



The key results of these projections are summarised as follows:

1. Expenditure is expected to exceed contribution income in all years.
2. The first cash flow deficit (total expenditure greater than total income) will occur in 2023.
3. Reserves are projected to be exhausted in 2038.

4. When reserves are exhausted, annual expenditure relative to total insurable wages (pay-as-you-go rate) will be 26.6%. The contribution rate will therefore have to be increased to this level to meet total expenditure.
5. The pay-as-you-go rate will increase to 36.3% in 2077.
6. The number of contributors for each pension in payment is expected to fall from 5.1 in 2017 to 1.6 in 2077.

Numerical details of the financial and demographic projections are provided in Tables 3.3 to 3.5.

Table 3.3. Projected Income & Expenditure - *Best Estimate* (millions of \$'s)

Year	Cash Inflows				Cash Outflows				Surplus/ (Deficit)	Reserves	
	Contribution Income	Investment Income	Other Income	Total	Benefits & Pensions	Admin. Expenses	Loss Provisions	Total		End of Year	R-E Ratio
2015	90.6	56.6	4.9	152.2	67.3	14.4	29.2	111.0	41.2	1,365	12.3
2016	94.2	51.8	16.8	162.8	75.2	14.1	15.9	105.2	57.6	1,423	13.5
2017	94.7	48.7	15.0	158.4	83.7	14.2	1.4	99.3	59.1	1,482	15.1
2018	97.5	44.3	0.7	142.4	94.4	14.9	0.0	109.3	33.1	1,515	13.9
2019	100.7	45.2	0.7	146.6	101.8	15.4	0.0	117.2	29.4	1,545	13.2
2020	104.0	46.0	0.7	150.7	114.5	15.8	0.0	130.3	20.4	1,565	12.0
2021	107.2	46.5	0.8	154.5	124.7	16.3	0.0	141.0	13.5	1,578	11.2
2022	110.4	46.7	0.8	157.9	136.0	16.7	0.0	152.7	5.2	1,584	10.4
2023	115.4	46.8	0.8	163.0	148.9	17.4	0.0	166.3	(3.2)	1,580	9.5
2027	129.7	43.7	0.9	174.3	206.4	19.3	0.0	225.7	(51.5)	1,452	6.4
2037	163.7	3.6	1.1	168.5	381.0	23.6	0.0	404.5	(236.1)	3	0.0
2047	200.9	(105.9)	1.4	96.4	594.1	28.8	0.0	622.9	(526.5)	(3,849)	(6.2)
2057	249.6	(322.3)	1.7	(71.0)	851.2	35.8	0.0	887.0	(958.0)	(11,387)	(12.8)
2067	313.2	(690.6)	2.2	(375.1)	1,125.7	45.0	0.0	1,170.6	(1,545.8)	(24,141)	(20.6)
2077	394.9	(1,241.5)	2.8	(843.9)	1,313.2	56.7	0.0	1,369.9	(2,213.8)	(43,114)	(31.5)

For 2015 to 2017, "Other Income" includes "Other Comprehensive Income" that does not flow through the Income & Expenditure Statement. Negative reserves indicate the indebtedness of the Fund and negative investment income is the current cost of servicing that debt.

Table 3.4. Projected Benefit Expenditure - *Best Estimate* (millions of \$'s)

Year	Pensions, Grants & Benefits						Benefits as a % of:	
	Age	Invalidity	Survivors	Assistance	Short-term	Emp. Injury	Insurable Wages	GDP
2015	46.4	3.2	3.3	1.5	11.5	1.4	8.2%	2.7%
2016	52.7	3.7	3.5	1.4	12.4	1.6	8.8%	2.9%
2017	59.9	3.7	3.7	1.3	13.6	1.5	9.7%	3.1%
2018	69.0	4.0	4.2	1.2	14.5	2.5	10.1%	3.4%
2019	75.3	4.2	4.5	1.2	15.0	2.6	10.6%	3.5%
2020	86.1	4.7	5.1	1.2	15.5	2.9	11.5%	3.7%
2021	94.9	5.0	5.6	1.2	16.1	3.2	12.2%	3.9%
2022	104.7	5.3	6.0	1.2	16.6	3.4	12.9%	4.1%
2023	115.7	5.6	6.5	1.2	17.4	3.7	13.5%	4.3%
2027	166.5	7.1	8.7	1.2	19.8	4.8	16.6%	5.2%
2037	321.8	11.5	16.6	1.3	25.1	7.6	24.3%	7.6%
2047	513.1	15.8	26.5	1.5	30.8	10.6	30.9%	9.5%
2057	745.5	19.8	37.7	1.8	38.2	13.7	35.6%	10.9%
2067	992.5	22.7	50.2	2.2	48.0	16.8	37.6%	11.5%
2077	1,144.4	30.2	62.4	2.6	60.5	16.8	34.8%	10.7%

Table 3.5. Projected Contributors & Pensioners at Year-end - Best Estimate

Year	# of Contributors	# of Pensioners					Total # of Pensioners	Ratio of Contributors to Pensioners
		Age	Invalidity	Survivors	Assistance	Death & Disablement		
2015	28,126	3,131	335	861	473	85	4,885	5.8
2016	28,450	3,474	343	928	449	85	5,279	5.4
2017	28,788	3,854	359	931	425	89	5,658	5.1
2018	28,413	4,178	370	1,134	404	95	6,181	4.6
2019	28,564	4,515	386	1,163	391	100	6,554	4.4
2020	28,713	4,847	399	1,207	380	105	6,937	4.1
2021	28,861	5,173	418	1,251	368	111	7,322	3.9
2022	29,032	5,529	435	1,289	358	117	7,728	3.8
2023	29,187	5,902	453	1,323	348	124	8,149	3.6
2027	29,521	7,432	523	1,399	316	149	9,819	3.0
2037	28,939	10,408	673	1,679	275	215	13,250	2.2
2047	27,721	12,032	722	1,890	258	263	15,165	1.8
2057	26,906	13,180	702	1,968	247	288	16,384	1.6
2067	26,302	13,837	641	1,980	236	296	16,989	1.5
2077	25,595	12,764	661	1,935	227	328	15,916	1.6

3.2.3 General Average Premium

For social security systems that are partially funded and designed to be perpetual, costs are usually presented in terms of the pay-as-you-go-rates, which represent annual expenditure as a percentage of insurable wages. For private pension plans, however, where full funding is the financing objective, there are other measures of the system's cost that may be useful for policy makers to be aware of.

The general average premium is the average level contribution rate required over the next 60 years to fully cover total expenditure during that period. This rate may be looked at as the average long-term cost of the complete Social Security benefits package. For the *Best Estimate* projections, the general average premium is 30.2%.

3.2.4 Actuarial Balance

Another measure of the financial sustainability of a social security system is called “actuarial balance.” For a given period, the actuarial balance can be defined as the difference between:

1. the sum of the beginning reserves and the present value of future contributions (money available to meet expenditure), and
2. the present value of future expenditure,

divided by the present value of future insurable wages. This formula produces a rate that indicates the adequacy or insufficiency of the present contribution rate for a given period. For the Social Security Fund, the deficiency expressed in dollars and as a percentage of GDP is shown in Table 3.6.

Table 3.6. Actuarial Balance 2018 – 2077 (\$'s are in millions)

	2017 Year-end Reserves	1,482
Plus	PV of Future Contributions	5,053
Minus	PV of Future Expenditure	13,889
Equal	PV of Surplus/(Shortfall)	(7,353)
	Actuarial Balance (% of Insurable Wages)	(16.0%)
	Actuarial Balance (% of GDP)	261%

Consistent with previous discussions, the negative actuarial balance indicates that together with reserves, the current contribution rate is insufficient to meet future expenditure for the next 60 years. The shortfall of 16.0% indicates that the average contribution rate would have to be increased to 27% for the entire period in order for reserves to last up to 2077.

3.3 Comparison With Results Of The 11th Actuarial Review

The following table shows a comparison between key projection results from the 11th Actuarial Review and this Review.

Table 3.7. Summary Results of 12th Review Compared With 11th Review

	12 th Actuarial Review	11 th Actuarial Review
Expenditure First Exceeds Total Income	2023	2025
Reserves Depleted	2038	2039
Pay-as-you-go rate in 2074	36.8%	33.7%
General Average Premium	30.2%	26.6%

As shown above the results of this 12th Review suggest a less favourable outlook for the cost of benefits in the long-term. This is due mainly to the lower assumed investment rate of return.

3.4 Sensitivity Analysis

Given the extensive set of assumptions required for projecting SSF finances and the length of the projection period, future experience will certainly differ from that projected under best estimate assumptions. To illustrate a reasonable range for the Fund's outlook, projections using two different sets of population, economic and Social Security assumptions are presented in the following chapter. The following table highlights the sensitivity of the projections to the yield on investments (reserves). As expected, the outlook is better if yields are higher.

Table 3.8. Sensitivity of Projections to Yield on Reserves

Assumed Long-term Yield	1st Deficit	Reserves Depleted	General Average Premium
2.5%	2022	2037	31.0%
3.0%	2023	2038	30.2%
4.0%	2025	2039	28.7%
5.0%	2027	2041	27.3%

Chapter 4 Alternative Scenarios

Best Estimate projections up to 2077 presented in the previous chapter provide estimates of future Social Security Fund demographics and finances under best-estimate assumptions. Given the uncertainty in forecasting such a long period, two alternative scenarios that highlight the sensitivity of the results to differences in assumptions regarding future outlook have been performed. These alternative projection sets encompass assumptions that are generally more optimistic and more pessimistic than those of the *Best Estimate* projections. However, since long-term sustainability will likely be more sensitive to future population growth and economic development than SS-specific factors such as compliance rates and operating costs, the basis for the alternative scenarios also focus on differences in population and economic outlooks.

The *Optimistic* scenario represents a larger economy with higher wages, lower pensions, better contribution compliance and higher investment returns while the *Pessimistic* scenario represents a smaller population with lower wages and larger pensions, lower contribution compliance and lower investment returns.

Following is a summary of the main assumptions for the three projection scenarios. The values for all other assumptions are similar across scenarios.

Table 4.1. Principal Demographic, Economic & National Insurance Assumptions

	<i>Optimistic</i>	<i>Best Estimate</i>	<i>Pessimistic</i>
Ultimate Total Fertility Rate	1.7	1.65	1.5
Mortality Improvements [^]	Very Slow	Slow	Medium
Net (In) Migration Per Annum	+50 in all years (<i>lower out migration, higher in migration</i>)	-50 in 2011 decreasing to 0 in 2021, then increasing to 25 in 205 then to 100 in 2065	-50 in all years (<i>higher out migration, lower in migration</i>)
Real GDP Growth	½% higher in each year	2.5% decreasing to 1.5% in 2021, 1.5% up to 2035, 0.5% thereafter	½% lower in each year
Real Increase In Wages (p.a.)	1.0%	0.75%	0.5%
Inflation	1.75%	2.25%	2.25%
Collection Of Contributions	+2%	-	-2%
Administrative Cost in 10 years as % of Ins. Wages	1.3%	1.5%	1.7%
Long-term Yield on Reserves	4.0%	3.0%	2.5%

[^] UN mortality improvement rates

The main population and Social Security demographic and financial results of the three projection sets are presented in Figure 4.1 and Table 4.2. As expected, the outlook for Social Security finances are closely linked to the size and age distribution of the general population and Social Security performance indicators such as contribution collection rates and yield on investments.

Figure 4.1. Projection Results – All Scenarios

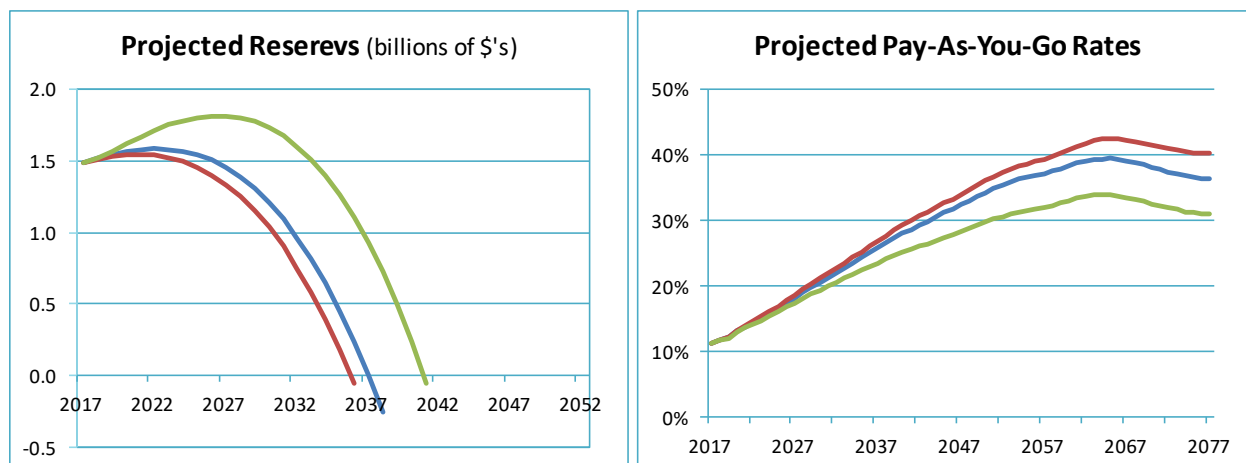


Table 4.2. Summary Results – All Scenarios

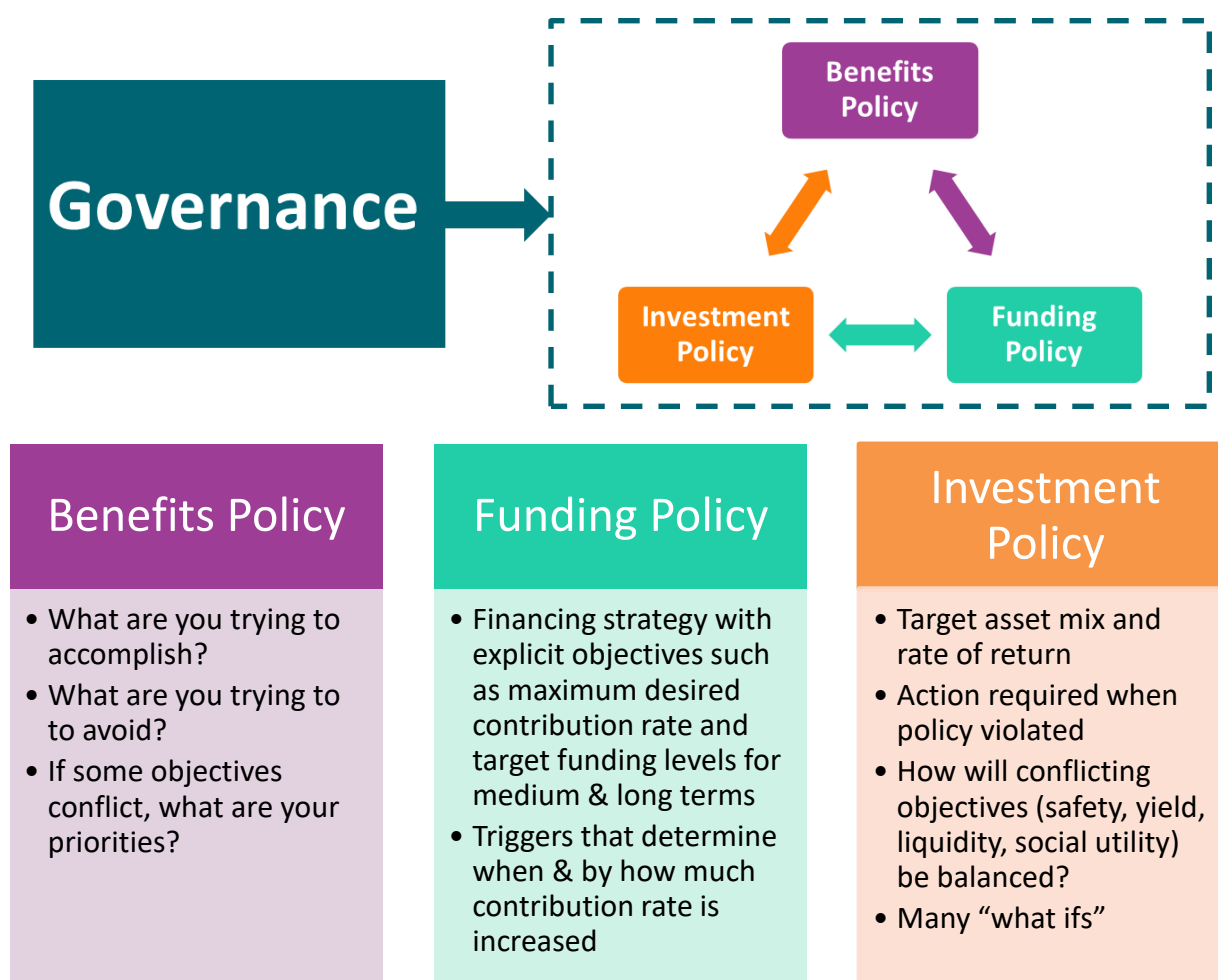
	Optimistic	Best Estimate	Pessimistic
Expenditure First Exceeds Contribution Income	All years	All years	All years
Expenditure First Exceeds Total Income	2026	2023	2022
Reserves Depleted	2041	2038	2036
General Average Premium	25.3%	30.2%	33.2%
Pay-as-you-go rate in 2047	28.3%	30.7%	34.0%
Pay-as-you-go rate in 2077	30.9%	37.3%	40.2%
# of Contributors per pensioner – 2077	1.8	1.6	1.5

Chapter 5 Enhancing Sustainability

To enhance the likelihood of the Social Security Fund (SSF) being both financially and inter-generationally sustainable in the long-term, policymakers should be outcome focussed in decision making. An outcome focused approach implies that the SSF is designed and managed around objectives, preferences and “what ifs”. Leaders should therefore not depend on “hoped-for” results but instead prepare for rational responses to specific potential outcomes such as population aging, economic downturns and natural disasters.

Good governance is key to the long-term success of any institution. For social security systems, good governance not only requires best practices and guidelines for day-to-day operations, but it requires the following three interconnected policies to prevent undesired outcomes and appropriate and timely responses to actual outcomes.

Figure 5.1. Interconnected Policies For Long-term Sustainability



An Investment Policy is already in place. However, the actual investment mix has historically not been in line with the acceptable ranges called for in the Policy. (See Section 1.5) The Fund does not have a Benefits Policy or a Funding/Contribution Policy.

The remainder of this chapter contains discussions and recommendations on design and policy features of these three policies geared towards ensuring benefit adequacy and long-term sustainability.

5.1. Funding Policy

As the results in Chapter 3 show, contribution rate increases will be necessary if the Fund is to meet its obligations beyond the next seventeen to twenty-two years. With annual surpluses now depending on investment earnings, the next rate increase cannot be deferred much longer if there is a desire to leave reserves untouched.

Until reserves are exhausted, there is no right or wrong time to increase the contribution rate. There are no hard and fast rules to financing social security benefits and so each country must consider its own circumstances when deciding how best to fund future benefits. A formal funding policy that guides future rate increases will help ensure that future increases are gradual and predictable. Such a policy would have a set medium and/or long-term funding objective and then guided by actuarial advice, a rate adjustment strategy would be devised.

The recommended illustrative funding policy for the SKN Social Security Fund comprises several priorities.

Figure 5.2. Funding Policy Priorities

Priority # 1	<ul style="list-style-type: none"> Reserves should not be used to meet expenditure before 2023
Priority # 2	<ul style="list-style-type: none"> Reserves should not fall below two (2) times annual expenditure prior to 2038 (when SS turns 60)
Priority # 3	<ul style="list-style-type: none"> Contribution rate increases should be gradual – no more than 2% at any single adjustment and no more than 4% in any 5-year period.
Priority # 4	<ul style="list-style-type: none"> The maximum contribution rate required to meet Priorities 1 & 2 is 15%

The ongoing relevance of the policy should be reviewed and commented on in each triennial actuarial review.

This policy is being recommended given the following:

1. After 40 years, the pay-as-you-go rate now exceeds the contribution rate (11%).
2. Pay-as-you-go rates are projected to increase to around 26% when the fund reaches 60 years (2038) and continue increasing thereafter due to demographic pressures.
3. Reserves, which in 2017 are approximately 15 times annual expenditure, are projected to be at 2 times annual expenditure in 2034 before being depleted in 2038.
4. Historical trends of contribution rates, pay-as-you-go rates and reserve-expenditure ratios in other Caribbean social security systems provide good guidance for the SKNSSF. For example, to enhance sustainability, contribution rates are currently 18¼% in Barbados, 14% in Guyana and gradually increasing to 15% in Dominica.

With the priorities of the funding policy described above as goals, the table below shows two alternative sets of contribution rate increases that will satisfy all four priorities described above under the Best Estimate projection set.

Table 5.1. Sample Contribution Rate Adjustment Schedules

Adjustment Schedule #1	Adjustment Schedule #2
<ul style="list-style-type: none"> 1% increase in each of 2020, 2023, 2026 & 2029 	<ul style="list-style-type: none"> 1% increase in 2020, 2011 & 2022
15% reached in 2029	14% reached in 2022

No contribution rate increase is recommended at this time. However, as discussed in the following section, benefit reforms are recommended. Revisions to both the contribution rate and pension provisions should be made when comprehensive reform takes place.

5.2. Benefits Policy

A comprehensive benefits policy should also include specific priorities and circumstances to be avoided. It should specifically consider benefit adequacy, equity and affordability. The following table summarises current challenges and recommended action for each of these categories.

Table 5.2. SKNSSB Policy Challenges and Options for Reform

Current Challenges		Recommended Action
1. Benefit Adequacy & Equity	(a) Level of the wage ceiling	(a) No increase recommended
	(b) Ad hoc wage ceiling & pension increases	(b) Automatic (or at least more predictable) ceiling & pension adjustments
	(c) Minimum pension slightly low	(c) No increase recommended
	(d) Pension adjustments not granted to those who were awarded maximum pension	(d) Adjust all pensions in payment regardless of their initial pension percentage
	(e) Only one pension for those who may meet requirements for Age & Survivors pensions	(e) Allow payment of Age & Survivors pensions together
	(f) No benefit for loss of wages due to unemployment	(f) Introduce a modest unemployment benefit
2. Benefit Affordability	1. Generous Age pension	2. Reform Age pension rules <ul style="list-style-type: none"> a) Full pension payable at later age b) Pension only paid if retired or substantially retired c) More gradual accrual rates

Benefit Adequacy & Equity

5.2.1. Adjustments To Wage Ceiling

The SS Act & Regulations are silent regarding when and by how much the wage ceiling shall be increased. The wage ceiling was last increased in 1998 from \$5,850 to \$6,500 per month. As presented in Section 2.2, approximately 94% of current contributors earn less than the \$6,500 per month wage ceiling. The ceiling is therefore considered to still be at an adequate level and no increase is recommended at this time.

5.2.2. Adjustments To Pensions and Grants

Regulations are also silent regarding pension adjustments. To date, such adjustments have been made on an ad hoc basis, usually after an actuarial review. Regular adjustments pensions in payment ensure that SS remains relevant pensioners. The most recent change taking effect in July 2014.

Ideally, adjustments to pensions and grants should occur at set annual or biennial intervals with the amount of the adjustment based on cumulative price or wage inflation. Under the current approach, the decision on when and by how much to adjust ultimately rests with the government.

Given that pensions were last increased in mid-2014, and average consumer prices have actually decreased since then, no pension increases are recommended in this report. It is, however, recommended that regulations be amended to provide for an automatic approach to adjustments that sets out the timing and procedure for increasing all fixed-dollar rates and pensions. While such automatic adjustments occur in all OECD countries, wage ceilings and pensions in payment are now adjusted automatically in social security schemes in Barbados, The Bahamas and The British Virgin Islands.

5.2.3. Pension Increases To Those Awarded Maximum Pension

When pensions were increased in mid-2014, no adjustment was granted to pensioners who were initially awarded the maximum pension rate of 60% of their insurable earnings. (The maximum is payable if more than 1,750 contributions have been made). This position was adopted in line with one interpretation of the exception to Regulation 31 (1) of Social Security (Benefit) Regulations which reads:

“Except that in no case shall the age pension exceed the lesser of sixty percent of the insured person’s average annual wages or the prevailing annual ceiling, nor be less than the prevailing minimum pension.”

While Benefit regulations are silent with respect to periodic pension increases, adjustments to social security pensions are granted to offset the effect that inflation has had on the purchasing power of the pension since it was awarded. The fact that the pension was capped at the time of award should no longer be a factor in limiting future increases. It is therefore recommended that the Regulation 31 be amended so that the capping of one’s pension relative to average insurable wages is only relevant at the time of award.

5.2.4. Payment of Age or Invalidity Pension With Survivors Pension

In line with recommendations of the previous 10th Actuarial Review Age pensioners can now also receive a Survivors pension if all qualifying conditions are met. Previously, when a spouse died, and the survivor was in receipt of, or later qualified for, an Age pension, he/she would only receive the larger of the Age pension or the Survivors’ pension.

To date, the necessary regulations to support the payment of Age/Invalidity pensions with Survivors pension have not been enacted. It is therefore recommended that Benefit regulations be amended to provide for this benefit enhancement at the earliest opportunity.

5.2.5. Unemployment Benefit

A discussion of unemployment benefit and its possible addition to the existing SS benefits package were included in previous actuarial reports and a comprehensive study was conducted in 2009. While unemployment is currently low in SKN, now is an ideal time to add an unemployment benefit to the SS package of benefits. As was the approach taken in both Barbados and The Bahamas, the introduction of an unemployment benefit in St. Kitts-Nevis can begin with modest benefits and minimum contribution rate. A 1% contribution rate is considered adequate to finance a benefit of 50% of average insurable wages for a maximum of 13 weeks.

5.2.6 National Health Insurance

We are advised that the Government of SKN is considering the introduction of a National Health Insurance (NHI) system that will insure the resident population against the costs of health care. Common objectives of NHI systems include expanding access to healthcare for residents, improving the quality of care provided in both the public and private sectors, and reducing the overall cost of care provided, especially at the time when care is being provided.

The SSB is not currently an active participant in NHI discussions and it is not clear whether the SSB will be called upon to administer the program. Given the infrastructure that the SSB already has regarding the collecting of contributions and payment of benefits, there are opportunities to gain both financial and performance efficiencies if the SSB was selected to administer the NHI program as has been experienced in the BVI.

Benefit Affordability

Pension reform has been recommended several times and public discussions were held across St. Kitts-Nevis many years ago. No reforms have yet been made. Most other countries in the Caribbean have made far-reaching reforms in recent years. The primary goal of these reforms is typically reducing long-term cost and thus enhancing long-term sustainability. As presented in Chapters 3 and 4, long-term costs as defined using the pay-as-you-go rate are expected to exceed 30% of insurable wages. The following sections present a discussion of the reforms that should be considered to make the Social Security system more affordable and sustainable without compromising equity and adequacy.

Age pensions are generous – 30% replacement of best 3-year average earnings after only 10 years of contributions and 60% after 35 years of contributions. Age pensions currently account for 70% of total benefit expenditure. Any meaningful change to future pension costs must therefore focus primarily on Age pension provisions. The provisions that could be revised to

effect reductions in long-term costs are those that would result in reducing the pay-as-you-go rate described below.

Figure 5.3. Components of The Age Pension Pay-As-You-Go Rate

$$\begin{aligned}
 \text{Expenditure as a \% of Insurable Wages} &= \frac{\text{Total Pension Expenditure}}{\text{Total Insurable Wages}} \\
 \text{(pay-as-you-go rate)} &= \frac{\# \text{ Pensioners} \times \text{Avg. Pension}}{\# \text{ Contributors} \times \text{Avg. Ins. Wage}} \\
 &= \frac{\# \text{ Pensioners}}{\# \text{ Contributors}} \times \frac{\text{Avg. Pension}}{\text{Avg. Ins. Wage}} \\
 &\qquad \qquad \text{Demographic Ratio} \qquad \qquad \text{Replacement Ratio}
 \end{aligned}$$

To reduce ultimate pay-as-you-go rates, one or both of the two ratios (demographic and replacement) would need to be lower than under the status quo scenario. The following table summarises the means by which each ratio could be reduced over time.

Table 5.3. Options for Reducing Long-term Pension Costs

	Demographic Ratio	Financial Ratio
Economic growth	✓	✓
Award pensions later	✓	
Award pension only if retired	✓	
Make it more difficult to qualify	✓	
Reduce average new pension amount (slower pension accruals, longer period for average wages, career average formula)		✓
No, or smaller, pension increases		✓

It should be noted that some changes that reduce cost and improve affordability may also negatively affect benefit adequacy. A delicate balance is therefore necessary when changes that reduce benefits are being considered.

5.2.7 Award Age Pensions Later

As recommended in previous actuarial reviews the age at which full Age pensions is first payable should be gradually increased to at least 65. This change is both consistent with increases in life expectancy since Social Security was established forty years ago and with the need to reduce long-term benefit costs. Most English-speaking Caribbean countries that started with a pension age below 65 either now have 65 as their pension age or are gradually increasing to 65. In Barbados, pensionable age is now 67.

The increase from age 62 to 65 could occur gradually at intervals of either one year every two years, or one year every three years as illustrated below.

Table 5.4. Recommended Schedules For Pensionable Age Increases

Pensionable Age	Option 1	Option 2
63	2020 to 2021	2020 to 2022
64	2022 to 2023	2023 to 2025
65	2024 onwards	2026 onwards

Other options are increases in pensionable age of 6 months each year or even 4 months each year. While slightly more complicated to explain, the negative effect on initial pension amounts will be smaller for those turning 62 in each subsequent year.

It is further recommended that age 62 be kept as the age at which reduced Age pensions are first payable with options to claim at any age between 62 and normal pension age. The reduction that should be applied to early pensions is $\frac{1}{2}\%$ for each month between the pension start date and pensionable age. For example, if the pension is set to start at age 62½ when Pensionable Age is 64, the amount payable would be reduced by 9% given that the claimant is 18 months younger than pensionable age.

It should be noted that increasing the pensionable age is the single most effective change for reducing long term costs. Using the formula presented in Figure 5.1, this change has the dual effect of reducing the number of pensioners and increasing the number of contributors at the same time.

When pensionable age is being increased the age at award for Age grants should be set to the same age.

5.2.8. Award Age Pensions Only if Retired

Close to 1,000 persons aged 62 and over made contributions in 2017. (Contributions are only paid for Employment Injury benefits) While the average insurable wage among older female contributors was close to the average insurable wage for all females, the average insurable wage for older men was almost 25% higher than the average insurable wage for all males.

While SKN SS has an Age pension which is paid starting at age 62 regardless of continued employment, some Caribbean countries have a Retirement benefit where pension payment is contingent on the insured being retired, or in some cases substantially retired.

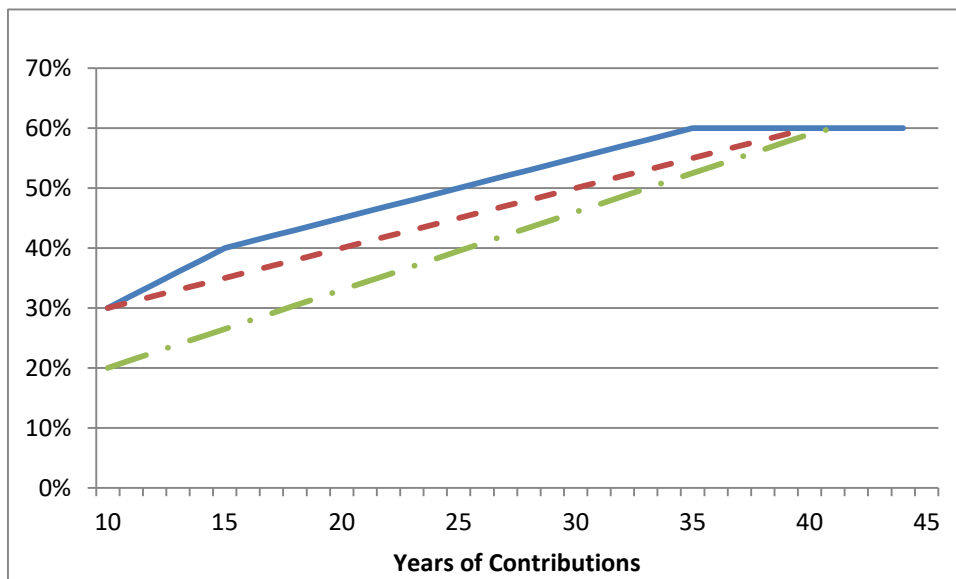
If reforms lead to pensionable age increasing to 65 or higher, the award of an early Age pension below the first age for a full pension should be contingent on the person being retired, or at least substantially retired. (One possible definition for “substantially retired” could be having earnings of less than 50% of the wage ceiling or your highest wage while employed.) Even if pensionable age is not increased when reforms occur, changing the Age benefit to a Retirement benefit should be considered.

5.2.9. Benefit Accrual Rates

The generosity of the Age benefit lies predominantly in how much is earned in the first 10 years of contributions – 30%. It takes another 30 years of contributions to earn the other 30% of the maximum 60% replacement rate. This front-loading of benefits was appropriate when the Scheme was first established to ensure that early retirees received adequate pensions. However, after 40 years, a more gradual accrual of benefits should be considered as a way of decreasing long-term costs, as well as providing pensions that are more directly related to the number of contributions made. Two such options are illustrated below. These accruals rates are:

- a. 20% after 10 years + 1.33% for each year thereafter
- b. 1.5% for each year of contributions.

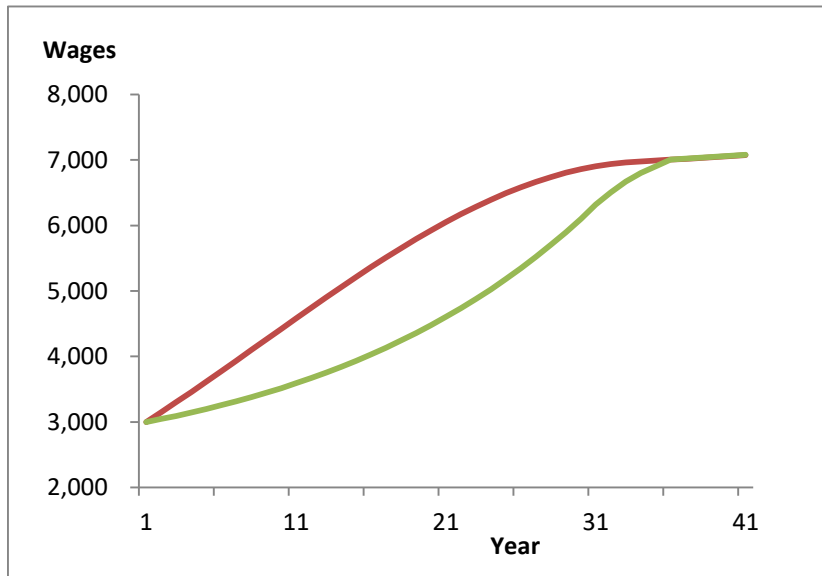
The following chart illustrates the pattern of benefit accrual rates under the current schedule (solid line) and the two schedules (dashed lines) described above.

Figure 5.4. Current and Recommended Pattern of Benefit Accrual Rates

Both reach 60% after approximately 40 years of contributions. They also both enhance benefit equity between contributors with varying contributions histories while not significantly affecting benefit adequacy. A change to either of these two accrual rate schedules can be phased in over 5 to 10 years so as not to significantly affect the benefits expected by those nearing pension age.

5.2.10. Wages Used For Calculating Pensions

Although contributions are paid on earnings over one's career, only wages in the best three years in the last fifteen years are used to calculate Age pensions. Therefore, two persons with different career earnings patterns who happen to have three years of similar high earnings, and the same number of contributions, will receive the same pension. However, they would have paid different contribution amounts and received different short-term benefits during their working years. This is illustrated in the following chart. For all but the last three years their insurable wages were different but under present rules, they will both receive the same pension amount.

Figure 5.5. Earnings Pattern Of Two Insureds With Same Age Pension

As only three years of wages are used, the amount of the pension could bear little relationship to actual contributions and produce inequities among generations (different contribution history but same pension) and between generations (passing on part of the cost of one's pension to future contributors.) Reference to only three years wages also produces inflated benefits for those who get a large salary increase just before retirement.

While a pension formula that uses indexed insurable wages over one's entire career would produce the most equitable pensions, a simple adjustment to the current approach that increases the number of years over which insurable wages are averaged to at least five, but perhaps as long as seven, is recommended.

5.2.11 Contingent Benefits and Automatic Adjustment Stabilizers

Recommendations were made above for individual Benefits and Funding policies. However, these two policies are interconnected as conflicts will arise when a desired level of benefits results in required contributions that exceed those permitted or desirable by the Funding policy. Two ways of dealing with such conflicting objectives are contingent benefits and automatic adjustment stabilizers. Practical examples of each are shown below.

Table 5.5. Contingent Benefits and Automatic Adjustment Stabilizers

Contingent Benefits	Automatic Stabilizers
<ul style="list-style-type: none"> ▪ Pension increases deferred for several years ▪ 90% of the regular new pension amount is guaranteed but the remaining 10% is only paid if projections meet certain targets ▪ If person in receipt of two pensions, the smaller one will be reduced or suspended 	<ul style="list-style-type: none"> ▪ If projections fall short of minimum funding levels or required contribution rates exceed set rates, benefits have to be reduced so that objectives met. For example: <ul style="list-style-type: none"> ○ Pensionable age will increase ○ Negative adjustment for pension amounts for new awards

While these examples may seem extreme as they hurt existing pensioners, they provide protection to current contributors who could be forced to pay much high contribution rates or receive substantially lower benefits.

5.3. Investment Policy

In the coming decades the Fund will face significant demographic changes due to the number of pensioners increasing at a faster rate than the number of contributors. In fact, the number of contributors is projected to start declining in the early 2030's. As a result of these strong demographic factors, small changes in the rate of return on investments will not produce material changes in the Fund's outlook, as shown in Table 3.8. As a result, investments should be managed in a prudent manner, focusing primarily on long-term safety and stability, targeting moderate rates of return as opposed to higher returns from riskier investments. While supporting local public sector initiatives may allow those entities to better finance their desired programs, the SSF should be cautious about further participation in such projects as liquidity needs in the next two decades may not be consistent with the other entities cash flow positions. Also, when funds are invested locally, there is an implicit dependence on the output and productivity of future generations.

The investment portfolio remains poorly diversified with 97% invested locally, 68% of assets held in short-term deposits, most of which are with one commercial bank. Investment returns have reduced sharply in recent years. (Section 1.6).

Over the last few years, there has also been a significant increase in real estate holdings. The Board is encouraged to tread cautiously into the field of non-traditional investments and avoid initiatives where the risk-reward tradeoff suggests that it may not be prudent to participate.

This may require rejecting investment opportunities initiated by the Government and statutory bodies.

Investment related recommendations are:

- a) Update the Investment Policy which was last revised in 2014.
- b) Review the strategic asset allocations in the Investment and/or reallocate current assets so that the investment mix is closer in line with approved allocations.
- c) Reduce the amount held in cash and short-term deposits. While this short-term investment strategy may have produced positive results in the past, the current low interest rate and post debt restructuring environments will likely see low short-term rates for many years. Specific recommendations for investment diversification include:
 - At least 20% overseas;
 - No more than 20% in certificates of deposit;
 - No more than 40% in SKN public sector securities; and
 - No more than 15% in domestic real estate.
- d) Review the asset classes for which target allocations in the Investment Policy Asset are set and consider sub-categories if certain targets within major classes are desired.

A sound governance framework is paramount for the effective and proper investment of social security funds. The SS Investment Policy explicitly covers the area of governance and clearly maps out the operational and oversight responsibilities and duties of all fiduciaries including the Board, Investment Committee, internal Investment Manager and external investment managers. It is important, therefore, that all fiduciaries execute their duties with the highest degree of integrity, care, skill and diligence. All investment opportunities, both private and public, should be made with the same high level of scrutiny and due diligence.

As the SS has experienced for itself, the investment of assets is not without risk. One of the increasing threats to social security funds in the region is the incidence of excessive political interference and influence over where funds are invested. Members of the Board and Investment Committee should guard themselves against unwarranted political interference and carry out their duties with reference to the Social Security Act and Regulations and the approved Investment Policy.

5.4. Other Issues

The following table summarises current challenges and recommended action for issues other than contributions, benefits and investments.

Table 5.6. SKNSSB Administrative Challenges And Recommendations

	Current Challenges	Recommended Action
Administration	(a) The current administration (IT) system is unable to offer modern ways of administering contributions and benefits and communicating with customers as is now the case banking, travel, utilities and other sectors. (b) Compliance low among self-employed persons (c) Operating costs still very high	(a) Invest in administrative systems that will bring significant improvements to service, efficiency and costs (b) More flexible options for self-employed contributions (c) Reduce staff, make greater use of available technology or upgrade where necessary
Branch Accounting	Long-term branch underfunded while Short-term and Employment Injury branches over funded	Revise allocations and transfer reserves between branches
Other	(a) Invalidity Pensioners & Employment (b) Social Security & Illegal Workers	(a) Could be considered with adequate safeguards (b) Not an issue for Social Security

5.4.1 Administrative Systems

Unlike commercial banks, airlines utility and many other private and public sector companies, Caribbean social security schemes have not transformed their operations and services to insured persons and employers by investing in new technology. As a result, the overall effectiveness and efficiency of these operations are well below what similar institutions elsewhere offer their customers. Following are areas in which new technology could significantly impact operations:

- i. Higher participation among self-employed persons
- ii. Better compliance among employers and more timely payment of contributions
- iii. Questions and queries resolved without having to visit an office

- iv. Easier claiming and accessing benefits and reduced wait times
- v. 24/7 access to historical contributions and ability to confirm if employer has made contributions
- vi. Planning ahead for retirement by estimating what your Age pension is likely to be
- vii. Reduced administrative costs

A new administrative system will be costly. However, the benefits of offering more services and more information to external customers and easier processes and workflows for staff, together with shorter wait times and financial savings that will come from reduced staff, will likely outweigh the financial costs as experienced as has been the case in other industries.

5.4.3. Administrative Efficiency

While on the decline in recent years, administrative costs in SKN are still high when compared to others in the OECS. The relatively large staff of around 110 account for around 60% of operating costs. In the three year review period, costs averaged 15% of contributions and 8% of contributions plus benefits. While there is no single benchmark or target that is ideal for social security systems with different contributions rates, wage ceilings and benefit complexity, operating costs of 10% to 12% of contribution income should be an achievable target over the next 10 years.

5.4.4. Branch Allocations & Transfer of Reserves

As of December 2017 both the Short-term and Employment Injury branches were significantly over funded. The overfunded positions are due to expenditure being substantially less than the percentage of contribution income allocated. Therefore, reallocations of contribution income and the transfer of reserves from both branches to the Long-term benefits branch may be considered.

Table 5.7. Benefit Branch Reserves, Contribution Allocation & Expenditure

Benefit Branch	Dec. 2017 Reserves	Reserve-Expenditure Ratio		Current Contribution Allocation	Projected Expenditure
		2017	Target		
Short-term	\$ 117.7	9.1	1.0	2.0%	1.7% - 1.9%
Employment Injury	\$ 189.9	86.7	2.0	1.0%	0.25% - 0.35%

The recommended changes to the allocation of contribution and transfer of reserves between branches are shown below.

Table 5.8. Recommended Changes to Contribution Allocation & Reserve Transfers

Benefit Branch	Contribution Income Allocation		Reserve Transfer
	Current	Recommended	
Short-term	2.0%	1.8%	\$100 million to LTB Branch
Employment Injury	1.0%	0.3%	\$185 million to LTB Branch
Long-term	8.0%	8.9%	\$52 million from STB & EIB Branches
All	11.0%	11.0%	

It should be noted that changes in the allocation of contribution and investment income, and transfer of reserves between branches, has no impact on the overall present or future funded position of the Social Security Fund. These adjustments are for internal accounting purposes only and are consistent with the manner in which the SSB has elected to finance and account for the various types of benefits.

5.4.5. Invalidity Pensioners & Employment

Social Security regulations define an invalid as “an insured person incapable of performing any employment as a result of a specific disease or bodily or mental disablement likely to be permanent and this condition has lasted for 26 weeks.” This is a very strict definition of “invalid” in which one is unable to perform any work. More liberal definitions could permit someone to work in a different occupation or for reduced or limited hours and/or wages.

Invalids who are able to perform some or limited work duties now have to make a choice:

- (a) keeping their full Invalidity pension and not work, or
- (b) accepting any level employment and foregoing the pension even if the wage offered is low.

For an invalid, performing minimal tasks and earning a small wage would be beneficial to their personal wellbeing. While allowing persons receiving Invalidity benefit to also receive employment income may appear reasonable, it could easily be abused, especially by new applicants who only have a partial disability. Employers could also collude with their employed Invalidity pensioners to not declare their true income so as to ensure continued payment of the pension.

If the Board wishes to consider the payment of Invalidity benefit to persons with limited employment income, below are several issues that should be considered:

1. Only persons who have been deemed invalid and have received a pension for at least a minimum period (one or two years) may be considered for ongoing pension eligibility if they return to work.
2. Allow such Invalidity pensioners to earn up to a maximum of say 25% of the average insurable wages on which their pension was based and still keep their pension.
3. Require any such pensioner who wants to try working to notify SS prior to engaging in such activity.
4. Social security will monitor both the contribution remittances and review at least annually the pensioner’s ongoing eligibility for the benefit. [Section 25(2)]

It is not possible to provide a reasonable estimate of the financial effect of such a change but if well managed, extra costs should not be material. Following are the ways in which income and expenditure could be affected:

- Increased benefit expenditure if under current rules, the pension would have been suspended once employment started. If very few suspensions occur now, then additional pension costs will be minimal.
- Reduced benefit expenditure if the person starts earning more than the threshold and the pension is eventually suspended.
- Additional contribution income from the wages earned.

5.4.6. Social Security & Illegal Workers

Section 19(3) of the Act states:

“Subject to the provisions of this Act, every person who on or after the appointed day, being over the age of sixteen years and under the age of sixty-two years, is an employed person shall be insured under this Act.”

From the above section it would appear that Social Security has no obligation to determine whether an employed person has the right to live and/or work in the Federation. It should therefore not deny registration or contributions from persons who may not be legally permitted to work.

Employment Injury benefits to illegal workers poses the greatest financial exposure to the Fund. For example, if an illegal worker has a job-related accident that results in injury or death, Social Security will be required to pay for medical expenses and even Survivors pension to dependants. Social Security should therefore educate all employers that it is their responsibility to ensure that all workers are legal and that they contribute for all of their workers.

Chapter 6 Good Governance Guidelines

The report of the 11th Actuarial Review contained an extensive discussion of Good Governance Guidelines for social security institutions prepared by the International Social Security Association (ISSA). A recommendation was made for the Board to adopt the principles and guidelines included in ISSA's Good Governance Guidelines, prepare similar guidelines for Social Security, and initiate steps to ensure that good governance practices are commonplace in all aspects of the Social Security's administration and operations. To date, a document with such good governance guidelines has not been prepared.

It is again recommended that a Good Governance Guidelines manual that is localized for the SSB be prepared. This manual should include the following:

- **Powers and Duties of the Minister:** These are found in various sections of the Act and Regulations but a comprehensive list, with section references, should be prepared.
- **Functions and Duties of the Board:** These include strategy & management, financial reporting & internal controls, contracts, communication, remuneration, delegation of authority and corporate governance matters.
- **Terms of Reference for the Chairman:** In addition to providing coherent leadership of SS and leading Board meetings the Chairman is expected to ensure the orientation, development and performance evaluation of Board members and lead all relations with stakeholders and the general public. He/she is also expected to uphold high standards of integrity, set the agenda, style and tone of Board discussions, ensure effective implementation of Board decisions, promote high standards of corporate governance, ensure the continual improvement in quality and calibre of managers, establish a close relationship of trust with the Director and management team, provide support and advice while respecting executive responsibility, and ensure that Ministerial approval is obtained for all Board decisions that require such approval.
- **Board Member Orientation:** Board Members are expected to exercise due care and skill in the performance of their duties. They should possess the relevant knowledge, qualifications, experience and wherewithal to be effective. They are expected to ask questions and participate in discussions at meetings, and to contribute relevant insights and experience. This can only be achieved by Board Members who have the requisite information and up-to-date training.
- **Board Member Code of Conduct:** Board Members have an obligation to act in the best interests of SS with due regard for the interest of all insured persons and other stakeholders, and in accordance with the Act & Regulations, good governance guidelines, best practices and Social Security's policies and procedures. Board Members should exercise the highest level of integrity, honesty and diligence. Specific guidance

for Board members should include: preparation, attendance and conduct at meetings, knowledge of Social Security's business and personal conduct.

- **Conflict of Interest:** Conflicts of interests may arise where an individual's or Board Members' personal or family interests and/or loyalties conflict with those of SS. Such conflicts have the potential to inhibit free discussions, result in decisions or actions that are not in the interests of SS, and risk the impression that SS has acted improperly. The aim of the policy should be to protect both the SS and the individual(s) involved from any appearance of impropriety.
- **Terms of Reference for the Director:** The Director/CEO is accountable and reports to the Board and is responsible for daily operations of the SS. He/she is responsible for business strategy and management, investment and finance, risk management and controls, human resources, communication and other duties which derive from these responsibilities.
- **Confidential Information:** This policy should provide guidance for all SS employees, managers and Board Members to prevent inadvertent disclosure of confidential information. Some specific items to be covered include access limitations to confidential information, how documents (paper and electronic) containing confidential information should be maintained, what circumstances may require confidentiality agreements to be entered into, who may speak to the press and general public and what information may be shared, and regular reminders to staff re not to disclose confidential information to anyone, except in the necessary course of business. Given the extensive nature of SS information the policy may not cover all circumstances and exceptions may be justified from time to time.
- **Disclosure of Information:** Material information with respect to the Board should be disclosed to the public promptly and in a consistent manner. Such information includes annual reports inclusive of financial statements and statistical information on operational performance, and actuarial review reports. The policy should also provide for the sharing of information with government departments, international agencies and others.

Statement of Actuarial Opinion

It is our opinion that for this report of the 12th Actuarial Review of the Social Security Fund:

- the data on which the projections and analysis are based are sufficient and reliable;
- the assumptions used are, in the aggregate, reasonable and appropriate, and
- the methodology employed is appropriate and consistent with sound actuarial principles.

This report has been prepared in accordance with the Caribbean Actuarial Association Actuarial Practice Standard #3 for Social Security Programs.

Morneau Shepell Ltd.



Derek Osborne
Fellow, Society of Actuaries



Marcia Tam-Marks
Fellow, Society of Actuaries

March 12th, 2019

References

2011 Census – St. Kitts & Nevis Statistics Department

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11th Actuarial Review of the Social Security Fund

St. Christopher and Nevis Social Security Act

St. Christopher and Nevis Social Security Fund Financial Statements

St. Christopher and Nevis Social Security Board Investment Policy Statement

Appendix A Summary of Contribution & Benefit Provisions

Following is a general description of the coverage, contributions and benefits provisions of the St. Kitts-Nevis Social Security Board (SKNSSB) as at December 31st, 2017.

A.1 Contingencies Covered & Benefits Provided

St. Christopher & Nevis Social Security provides for the following benefits:

- c. **Long-term benefits:** Age, Invalidity and Survivors' benefits.
- d. **Short-term benefits:** Sickness benefit, Maternity allowance & grant, Funeral grant.
- e. **Employment Injury benefits:** Injury benefit, Disablement benefit, Medical Expenses, Death benefit and Burial grant.

A.1.1 Insured Persons

Employed, self-employed and voluntary insured persons aged 16-61 are covered for the above contingencies as follows:

- Employed persons: All contingencies.
- Self-employed persons: All contingencies except employment injury benefits.
- Voluntary insured persons are covered for Age & Survivors' benefits only.
- Employed persons under age 16 or over age 61 are covered for employment injury benefits only.

A.1.2 Insurable Earnings and Contributions

Earnings used for determining contributions and benefits are limited to \$6,500 per month. Earnings include basic salary and all other earnings paid in cash.

The ceiling on insurable wages has increased since 1978 as follows:

1978 to 1983	\$24,000.00 per annum
1984 to 1992	\$48,000.00 per annum
1993 to 1995	\$62,400.00 per annum
1996 to 1997	\$70,200.00 per annum
1998 to present	\$78,000.00 per annum

Contributions are computed as a percentage of insurable earnings. The contribution rate is 11%, 5% paid by the employee and 6% by the employer. Before Employment Injury Benefits were introduced in 1986, the contribution rate was 10%. Self-employed persons pay a 10% contribution rate and voluntary contributors pay at 5% of insurable earnings. Contributions at 1% of insurable earnings are payable for those less than 16 or over 61.

Table A.1 Contribution Rates

Insured Category	Employee	Employer	Total
Employed	5%	6%	11%
Self-employed	-	-	10%

A.2 Benefit Provisions

A.2.1 Long-Term Benefits

(a) OLD-AGE CONTRIBUTORY PENSION

CONTRIBUTION REQUIREMENT: 500 paid or credited weekly contributions of which 150 must be paid.

AGE REQUIREMENT: 62. The pension is not dependent on retirement from the workforce.

AMOUNT OF BENEFIT: 30% of average insurable earnings over the best three years in the last 15, plus 2% for every 50 weeks credited between 500 and 750, plus 1% for every 50 weeks credited over 750.

MAXIMUM PENSION: 60 % of average earnings over the best three years.

MINIMUM PENSION: \$430.00 per month. The minimum pension also applies to Invalidity pension. It was last increased on July 2014 from \$400 per month.

(b) AGE GRANT

CONTRIBUTION REQUIREMENT: 50 paid or credited weekly contributions.

ELIGIBILITY: Other than for the contribution requirement, the applicant must be eligible for Age Benefit.

AMOUNT OF BENEFIT: 6 times average weekly insurable earnings for each 50 weekly contributions paid or credited. This amount is paid as a lump sum.

(c) INVALIDITY PENSION

CONTRIBUTION REQUIREMENT: 150 weekly contributions paid.

ELIGIBILITY: The applicant is:

- iv. Less than 62,
- v. Medically declared an invalid, other than as a result of an employment injury,
- vi. Has exhausted the maximum period for sickness benefit.

AMOUNT OF BENEFIT: Calculated in the same manner as for Age benefit, except that the minimum pension is 30% of average insurable earnings or \$430 per month, whichever is higher.

DURATION OF PENSION: Payable as long as invalidity continues. A review of the person's continuing eligibility is made at least every three years.

(d) SURVIVORS' BENEFITS

CONTRIBUTION REQUIREMENT: The deceased, at time of death, was receiving or had paid enough contributions to qualify for an Invalidity or Age pension.

ELIGIBILITY: Widow or widower married for at least three years (includes common-law spouse), child(ren) under 16, 18 if in full-time education or invalid, and dependent parents.

AMOUNT OF BENEFIT: The proportion of Invalidity pension shown below:

Widow or widower: 50%;

Child or parent: 16 2/3%;

Child (orphan or disabled): 33 1/3%;

Maximum benefit: 100% of pension deceased would have been entitled to.

Minimum pensions: Widow(er) - \$215 per month (increased from \$200 July 2014)

Child/parent - \$103.20 per month (increased from \$96 July 2014)

If the claimant is also entitled to an Age Pension, the Age pension plus 50% of the Survivors pension is paid, subject to a minimum of 100% of the Survivors pension.

DURATION OF BENEFIT:

- Widow or widower aged 45 or over at time of death, or disabled: life pension or until the beneficiary is entitled to a larger Age pension in his/her own right. The pension will cease upon remarriage or cohabitation;
- For a widow(er) under age 45 and not disabled, or not married for at least 3 years: one year;
- For dependent children, up to age 16, or 18 if attending school or college.
- For an invalid child, for as long as invalidity continues.
- For a parent under 62 and not invalid, one year. If invalid or over 62, pension payable for life.

(e) SURVIVORS' GRANT

CONTRIBUTION REQUIREMENT: 50 contributions paid or credited by the deceased insured person.

ELIGIBILITY: Other than for the contribution requirement of the deceased, the applicant must be eligible for survivors pension.

AMOUNT OF BENEFIT: The same proportion of the Age grant as Survivors' pension bears to the Age pension.

(f) ASSISTANCE PENSION

ELIGIBILITY: The applicant must be:

- Either aged 62 or over or an invalid,
- Not gainfully employed,
- In need,
- Ordinarily resident in St. Kitts-Nevis,
- Not previously awarded an Age or Invalidity pension.

AMOUNT OF BENEFIT: \$255.00 per month.

A.2.2 Short-Term Benefits

(a) SICKNESS BENEFIT

CONTRIBUTION REQUIREMENTS: 26 paid contribution weeks with at least 8 weeks in the last 13. The insured must be 16 or over and under age 62, and was employed immediately before onset of the illness.

WAITING PERIOD: 3 days. If incapacity lasts for more than 3 days, benefit is payable from the first day. Two periods of illness separated by less than eight weeks are treated as one.

AMOUNT OF BENEFIT: 65% of average weekly insurable earnings during the 13 weeks prior to illness.

DURATION OF BENEFIT: Maximum of 26 weeks.

(b) MATERNITY ALLOWANCE

CONTRIBUTION REQUIREMENT: 39 paid contribution weeks with at least 20 contributions in the last 39 weeks immediately preceding the week that is 6 weeks before the expected week of confinement or the week from which benefit began, if later.

AMOUNT OF BENEFIT: 65% of average weekly insurable earnings during the last 39 weeks.

DURATION OF BENEFIT: 13 weeks, starting no earlier than 6 weeks before the expected date of confinement.

(c) MATERNITY GRANT

CONTRIBUTION REQUIREMENT: Same as for Maternity Allowance. If the mother fails to qualify for Maternity Allowance but her legally married husband's contributions satisfy these conditions, the Maternity Grant is payable.

AMOUNT OF GRANT: \$450. The Maternity Grant has increased as follows:

1978 – 1983	50.00
1984 – 1998	100.00
1989 – 1992	200.00
1993 – 1995	300.00
1995 – 1998	400.00
1998 – present	450.00

(d) FUNERAL GRANT

ELIGIBILITY: The insured person must have made at least 26 contributions. A grant is also payable in respect of the death of the spouse or a dependant child of the insured. If death results from employment injury, no prior contributions are required.

AMOUNT OF GRANT: \$4,000 for the insured or his/her spouse. The amount for a dependant child ranges from \$400 to \$1,600. The funeral grant for the insured has been increased as follows:

1978 – 1983	\$ 200.00
1984 – 1988	500.00
1989 – 1992	1,000.00
1993 – 1994	1,500.00
1995 – 1997	2,000.00
1998 – 2002	2,500.00
2002 - present	4,000.00

A.2.3 Employment Injury Benefits**(a) INJURY BENEFIT**

ELIGIBILITY: Incapable of work as a result of an accident arising out of insured employment, or as a result of an illness related to employment. There are no qualifying contribution requirements for Employment Injury benefits.

AMOUNT OF BENEFIT: 75% of average insurable earnings in the last 13 weeks before the accident or disease occurred (or less if the person was insured for a shorter period.)

DURATION OF BENEFIT: 26 weeks.

WAITING PERIOD: 3 days. If incapacity lasts 4 or more days, benefit is payable from the first day.

(b) DISABLEMENT BENEFIT

ELIGIBILITY: Partial or total loss of any physical or mental faculty as a result of a job-related accident or disease.

WAITING PERIOD: The payment period of injury benefit.

AMOUNT OF BENEFIT: The payment of a pension or a grant is based on the percentage loss of faculty suffered.

- If degree of disablement is less than 20%, a grant equal to 365 times the weekly benefit rate times the degree of disablement is paid.
- If degree of disablement is 20% or more, a weekly benefit of the injury benefit amount times the degree of disablement is paid.
- In the case of temporary disablement, the benefit is payable for as long as the disablement lasts up to a maximum of 365 weeks.

(c) DEATH BENEFIT

ELIGIBILITY: Dependants are defined as for survivors' benefit.

AMOUNT OF BENEFIT: Proportion of disablement pension, the same percentage as for Survivors benefit.

(d) MEDICAL EXPENSES

EXPENSES COVERED: Reasonable expenses up to \$25,000 for doctor's fees, medication, hospitalisation, travelling and constant care and other specified and other specified costs incurred as a result of an employment injury or prescribed disease.

(e) BURIAL GRANT

ELIGIBILITY: The insured person died as a result of an employment injury. No prior contributions are required.

AMOUNT OF GRANT: \$4,000.

A.2.4 CARICOM Social Security Agreement

St. Kitts-Nevis is a signatory to the CARICOM Agreement on Social Security. By totalising contributions made in all CARICOM countries, persons who have insufficient contributions to qualify for a pension in one or more states, may receive pensions from all systems if the total number of contributions made exceeds the number required in that state. The pension payable would be the proportion that contributions made in that state bear to the total contributions made times the pension that would have been payable for the total number of contributions made. The Agreement covers Old-age, Invalidity, Survivors and Disablement benefits only.

Appendix B Methodology, Data & Assumptions

This actuarial review makes use of the comprehensive methodology developed at the Financial and Actuarial Service of the ILO (ILO FACTS) for reviewing the long-term actuarial and financial status of a national pension scheme. The review has been undertaken by modifying the generic version of the ILO modeling tools to fit the specific case of St. Kitts-Nevis and the Social Security Fund. These modeling tools include a population model, an economic model, a labour force model, a wage model, a long-term benefits model and a short-term benefits model.

The actuarial valuation begins with a projection of St. Kitts-Nevis's future demographic and economic environment. Next, projection factors specifically related to Social Security are determined and used in combination with the demographic/economic framework to estimate future cash flows and reserves. Assumption selection takes into account both recent experience and future expectations, with emphasis placed on long-term trends rather than giving undue weight to recent experience. Projections have been made under three assumption sets for which the demographic and economic assumptions vary.

B.1 Modelling the Demographic & Economic Developments

The general St. Kitts-Nevis population has been projected beginning with totals obtained from the preliminary results of the 2011 national census and by applying appropriate mortality, fertility and migration assumptions. For the Best Estimate scenario the total fertility rate is assumed to remain constant at 1.65 throughout the projection period. Table B.1 shows ultimate age-specific and total fertility rates.

Table B.1. Age-Specific & Total Fertility Rates

Age Group	2017	Ultimate Fertility Rates		
		<i>Optimistic</i>	<i>Best Estimate</i>	<i>Pessimistic</i>
15 - 19	-	-	-	-
20 - 24	0.046	0.047	0.046	0.044
25 - 29	0.091	0.093	0.091	0.088
30 - 34	0.071	0.074	0.071	0.069
35 - 39	0.074	0.076	0.074	0.072
40 - 44	0.039	0.041	0.039	0.038
45 - 49	0.012	0.012	0.012	0.011
TFR	1.65	1.70	1.65	1.60

Mortality rates have been determined using United Nations life tables for Latin America. These rates have been adjusted selected to model closely the actual number of deaths in St. Kitts-Nevis. Improvements in life expectancy for the Best Estimate scenario have been assumed to follow the “slow” rate as established by the United Nations. Sample mortality rates for the Best Estimate scenario and the life expectancies at birth and at age 62 for sample years are provided in Table B.2.

Table B.2. Sample Mortality Rates & Life Expectancies

Age	Males			Females		
	2017	2047	2077	2017	2047	2077
0	0.0455	0.0295	0.0075	0.0038	0.0045	0.0050
5	0.0013	0.0007	0.0003	0.0001	0.0001	0.0001
15	0.0007	0.0004	0.0004	0.0002	0.0001	0.0001
25	0.0015	0.0009	0.0010	0.0009	0.0005	0.0002
35	0.0022	0.0013	0.0010	0.0009	0.0005	0.0004
45	0.0041	0.0027	0.0024	0.0018	0.0016	0.0015
55	0.0095	0.0069	0.0064	0.0051	0.0043	0.0039
65	0.0229	0.0178	0.0160	0.0119	0.0099	0.0092
75	0.0544	0.0458	0.0447	0.0350	0.0279	0.0248
85	0.1243	0.1128	0.1238	0.1121	0.0849	0.0701
95	0.2594	0.2518	0.2788	0.2715	0.2320	0.2097
Life Expectancy at:						
Birth	68.7	73.5	76.1	78.6	81.1	82.4
Age 62	17.3	18.7	18.8	20.4	22.1	23.1

Table B.3. Life Expectancies At Age 62

	2017	2077		
		Optimistic	Intermediate	Pessimistic
Male	17.3	18.5	18.8	19.9
Female	20.4	22.0	23.1	23.1

Net outward migration is assumed to decrease to zero in 2025 followed by future periods of low net inward migration

Table B.4. Net Migration

Age	2017			2045+		
	Optimistic	Intermediate	Pessimistic	Optimistic	Intermediate	Pessimistic
0 - 9	3	(2)	(6)	7	2	(2)
10 - 19	1	(1)	(3)	4	1	(1)
20 - 29	11	(7)	(26)	28	9	(9)
30 - 39	10	(6)	(22)	24	8	(8)
40 - 49	4	(3)	(10)	10	3	(3)
50 - 59	1	(1)	(3)	3	1	(1)
60 - 69	0	(0)	(0)	0	0	(0)
70+	(0)	0	1	(1)	(0)	0
All Ages	30	(20)	(70)	75	25	(25)

The projection of the labour force, i.e. the number of people available for work, is obtained by applying assumed labour force participation rates to the projected number of persons in the total population. Over the first 30 years age-specific labour force participation rates for both males and females for ages 44 and over are assumed to gradually approach the rates that in 2017 apply to persons five years younger. Table B.5 below shows the assumed age-specific labour force participation rates in 2017 and 2077.

Table B.5. Age-Specific & Total Labour Force Participation Rates

Age	Males		Females		Year	Males	Females
	2017	2077	2017	2077			
17	30%	30%	23%	23%			
22	80%	80%	82%	82%	2017	78%	75%
27	82%	82%	86%	86%	2022	80%	75%
32	89%	89%	92%	92%			
37	91%	91%	91%	91%	2027	82%	76%
42	92%	92%	91%	91%	2037	82%	78%
47	95%	92%	92%	91%	2047	82%	78%
52	91%	96%	91%	92%			
57	89%	90%	74%	90%	2057	82%	78%
62	76%	88%	53%	70%	2067	82%	78%
67	44%	73%	31%	48%	2077	82%	78%

The projected real GDP divided by the projected labour productivity per worker gives the number of employed persons required to produce total output. Unemployment is then measured as the difference between the projected labour force and employment.

Estimates of increases in the total wages as well as the average wage earned are required. Annual average real wage increases are assumed equal to the assumed increase in labour productivity as it is expected that wages will almost adjust to efficiency levels over time. The inflation assumption affects nominal average wage increases. Actual projection assumptions for each scenario may be found in Table 4.1.

B.2 Projection of Social Security Income & Expenditure

This actuarial review addresses all Social Security Fund revenue and expenditure items. For Short-term benefits, income and expenditure are projected as a percentage of insurable wages. Projections of pensions are performed following a year-by-year cohort methodology. For each year up to 2077, the number of contributors and pensioners, and the dollar value of contributions, benefits and administrative expenditure, is estimated.

Once the projections of the insured (covered) population, as described in the previous section, are complete, contribution income is then determined from the projected total insurable wages, the contribution rate and contribution density. Contribution density refers to the average number of weeks of contributions persons make during a year.

Benefit amounts are obtained through contingency factors based primarily on Scheme experience and applied to the population entitled to benefits. The yield on reserves is assumed to remain constant throughout the projection period. Social Security's administrative expenses are modelled as a percentage of insurable earnings. Finally, the end-of-year reserve is the beginning-of-year reserve plus the net result of cash inflow and outflow.

B.3 Social Security Population Data and Assumptions

The data required for the valuation of the Social Security Fund is extensive. As of December 31st, 2017, required data includes the insured population by active and inactive status, the distribution of insurable wages among contributors, the distribution of paid and credited contributions and pensions in payment, all segregated by age and sex.

Scheme specific assumptions such as the incidence of invalidity, the distribution of retirement by age, density and collection of contributions, are determined with reference to the application of the Scheme's provisions and historical experience.

Projecting investment income requires information of the existing assets at the valuation date and past performance of each class. Future expectations of changes in asset mix and expected rates of return on each asset type together allow for long-term rate of return expectations.

Details of Social Security specific input data and the key assumptions used in this report are provided in tables B.6 through B.10.

Table B.6. 2017 Active Insured Population, Earnings & Past Credits

Age	# of Active Insureds		Average Monthly Insurable Earnings		Average # of Years of Past Contributions	
	Male	Female	Male	Female	Male	Female
15 - 19	609	517	1,555	1,572	1.1	0.9
20 - 24	1,740	1,821	2,126	2,045	3.6	3.3
25 - 29	1,930	1,976	2,652	2,625	6.9	6.6
30 - 34	1,881	1,955	3,322	3,114	10.3	10.1
35 - 39	1,813	1,930	3,914	3,418	13.7	13.7
40 - 44	1,619	1,821	4,127	3,613	17.2	17.3
45 - 49	1,473	1,552	4,530	3,454	20.7	21.0
50 - 54	1,433	1,407	4,292	3,170	22.7	23.4
55 - 59	1,114	1,181	3,878	3,236	23.3	24.2
60 - 64	519	497	4,128	2,739	23.5	24.5
62+	550	406	4,077	2,864	23.5	24.5
All Ages	14,681	15,063	3,448	3,011	12.4	12.7

Table B.7. Pensions in Payment - December 2017

Age	Old-Age Benefit		Invalidity Benefit		Survivors Benefits		Death & Disablement		Assistance	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
0 - 4	-	-	-	-	15	7	-	-	-	-
5 - 9	-	-	-	-	52	41	3	1	-	-
10 - 14	-	-	-	-	67	98	3	-	-	-
15 - 19	-	-	-	-	79	81	-	2	2	-
20 - 24	-	-	1	-	-	-	1	-	7	2
25 - 29	-	-	5	-	-	-	-	-	6	4
30 - 34	-	-	3	2	-	-	1	1	12	8
35 - 39	-	-	7	8	-	-	4	2	11	6
40 - 44	-	-	9	9	-	3	6	2	6	10
45 - 49	-	-	14	24	3	9	10	4	6	3
50 - 54	-	-	39	30	11	35	13	5	5	7
55 - 59	-	-	57	79	16	61	6	4	17	13
60 - 64	624	614	24	47	33	83	2	4	11	14
65 - 69	593	598	-	-	18	69	5	4	15	14
70 - 74	325	352	-	-	21	82	-	3	16	28
75 - 79	175	193	-	-	14	69	-	1	26	42
80 - 84	100	122	-	-	7	45	-	-	6	44
85 - 89	46	76	-	-	2	37	-	1	11	33
90 - 94	16	17	-	-	1	18	-	1	11	13
95 - 99	1	2	-	-	-	5	-	-	2	3
# of Pensioners	1,880	1,974	159	199	339	743	54	35	170	244
Avg Monthly	\$ 1,486	\$ 1,195	\$ 926	\$ 861	\$ 335	\$ 416	\$ 252	\$ 180	\$ 255	\$ 255

The following table shows assumed density factors, or the average portion of the year for which contributions are made. These rates are assumed to remain constant for all years.

Table B.8. Density Of Contributions

Age	Males	Females
17	48%	44%
22	75%	78%
27	80%	86%
32	82%	88%
37	82%	90%
42	82%	91%
47	81%	91%
52	82%	90%
57	83%	90%
62	81%	85%

The following table shows the expected incidence rates of insured persons qualifying for Invalidity benefit which is assumed for all projection years.

Table B.9. Rates of Entry Into Invalidity

Age	Males	Females
17	-	-
22	0.575	-
27	1.036	0.337
32	0.709	1.194
37	1.103	1.209
42	0.824	2.929
47	3.168	4.081
52	5.117	6.870
57	8.677	13.266
62	12.237	19.661

Table B.10, shows the assumed probability of Survivor benefit claims and the average ages of new claimants, groups by the age of the deceased.

Table B.10. Probability of a Deceased Having Eligible Survivors & Their Average Ages

Age	Males		Females	
	Probability of Eligible Spouse	Avg # of Eligible Children	Probability of Eligible Spouse	Avg # of Eligible Children
17	0%	-	0%	-
22	9%	0.0	0%	0.1
27	32%	0.1	0%	0.3
32	43%	0.5	7%	0.7
37	36%	0.9	23%	1.4
42	39%	1.4	28%	1.3
47	58%	1.3	13%	1.2
52	71%	0.8	13%	0.9
57	77%	0.5	36%	0.2
62	68%	0.6	41%	0.1
67	39%	0.2	17%	-
72	19%	0.2	3%	-
77	16%	0.2	3%	-
82	11%	0.1	2%	-
87	4%	0.0	1%	-

Appendix C Projection Results

Table C.1. Projected St. Kitts-Nevis Population, All Scenarios

Year	All Ages	0-15		16-61		62+		Age Depend. Ratio
2011	47,195	11,479	24.3%	31,334	66.4%	4,382	9.3%	0.14
Best Estimate								
2021	49,640	9,962	20.1%	33,142	66.8%	6,536	13.2%	0.20
2031	51,962	10,016	19.3%	32,370	62.3%	9,577	18.4%	0.30
2041	52,751	9,431	17.9%	31,675	60.0%	11,645	22.1%	0.37
2051	52,143	8,650	16.6%	30,211	57.9%	13,282	25.5%	0.44
2061	51,273	8,362	16.3%	28,588	55.8%	14,322	27.9%	0.50
2071	50,181	8,246	16.4%	27,759	55.3%	14,177	28.3%	0.51
Optimistic								
2021	50,209	10,157	20.2%	33,559	66.8%	6,493	12.9%	0.19
2031	53,141	10,541	19.8%	33,174	62.4%	9,426	17.7%	0.28
2041	54,462	10,065	18.5%	33,022	60.6%	11,375	20.9%	0.34
2051	54,389	9,402	17.3%	32,031	58.9%	12,956	23.8%	0.40
2061	54,136	9,320	17.2%	30,822	56.9%	13,994	25.8%	0.45
2071	53,787	9,345	17.4%	30,538	56.8%	13,904	25.9%	0.46
Pessimistic								
2021	49,025	9,758	19.9%	32,703	66.7%	6,563	13.4%	0.20
2031	50,652	9,472	18.7%	31,513	62.2%	9,667	19.1%	0.31
2041	50,871	8,784	17.3%	30,236	59.4%	11,851	23.3%	0.39
2051	49,564	7,896	15.9%	28,250	57.0%	13,418	27.1%	0.47
2061	47,553	7,443	15.7%	26,134	55.0%	13,976	29.4%	0.53
2071	45,471	7,184	15.8%	24,733	54.4%	13,554	29.8%	0.55

Table C.2. Projected Cash Flows & Reserves, *Pessimistic Scenario* (millions of \$'s)

Year	Cash Inflows				Cash Outflows				Surplus/ (Deficit)	Reserves	
	Contribution Income	Investment Income	Other Income	Total	Benefits & Pensions	Admin. Expenses	Loss Provisions	Total		End of Year	R-E Ratio
2015	90.6	56.6	4.9	152.2	67.3	14.4	29.2	111.0	41.2	1,365	12.3
2016	94.2	51.8	16.8	162.8	75.2	14.1	15.9	105.2	57.6	1,423	13.5
2017	94.7	48.7	15.0	158.4	83.7	14.2	1.4	99.3	59.1	1,482	15.1
2018	94.9	44.3	0.7	139.8	94.4	14.8	0.0	109.2	30.6	1,513	13.9
2019	97.9	41.3	0.7	139.9	101.8	15.4	0.0	117.1	22.8	1,535	13.1
2020	100.9	38.0	0.7	139.7	114.5	15.9	0.0	130.4	9.3	1,545	11.8
2021	103.9	38.2	0.7	142.8	124.7	16.4	0.0	141.1	1.7	1,546	11.0
2022	106.8	38.1	0.7	145.7	136.1	16.9	0.0	153.0	(7.3)	1,539	10.1
2023	111.5	37.8	0.8	150.1	149.0	17.7	0.0	166.7	(16.6)	1,523	9.1
2027	124.6	33.8	0.9	159.2	206.9	20.0	0.0	227.0	(67.8)	1,334	5.9
2037	156.5	(4.5)	1.1	153.0	385.3	25.9	0.0	411.2	(258.2)	(314)	(0.8)
2047	191.6	(101.5)	1.3	91.4	604.9	31.8	0.0	636.8	(545.3)	(4,384)	(6.9)
2057	230.9	(283.2)	1.6	(50.7)	849.8	38.4	0.0	888.2	(938.9)	(11,943)	(13.4)
2067	277.9	(576.6)	1.9	(296.7)	1,101.2	46.2	0.0	1,147.4	(1,444.1)	(24,078)	(21.0)
2077	342.5	(998.7)	2.4	(653.8)	1,288.7	56.9	0.0	1,345.6	(1,999.4)	(41,450)	(30.8)

For 2015 to 2017, "Other Income" includes "Other Comprehensive Income" that does not flow through the Income & Expenditure Statement
 Negative reserves indicate the indebtedness of the Fund and negative investment income is the current cost of servicing that debt.

Table C.3. Projected Benefit Expenditure— *Pessimistic Scenario* (millions of \$'s)

Year	Pensions, Grants & Benefits						Benefits as a % of:	
	Age	Invalidity	Survivors	Assistance	Short-term	Emp. Injury	Insurable Wages	GDP
2015	46.4	3.2	3.3	1.5	11.5	1.4	8.2%	2.7%
2016	52.7	3.7	3.5	1.4	12.4	1.6	8.8%	2.9%
2017	59.9	3.7	3.7	1.3	13.6	1.5	9.7%	3.1%
2018	69.0	4.0	4.2	1.2	14.4	2.5	10.2%	3.4%
2019	75.4	4.2	4.5	1.2	14.9	2.6	10.6%	3.5%
2020	86.3	4.7	5.1	1.2	15.4	2.9	11.6%	3.8%
2021	95.1	5.0	5.5	1.2	15.9	3.2	12.3%	4.0%
2022	105.0	5.3	6.0	1.2	16.4	3.4	13.0%	4.2%
2023	116.1	5.7	6.5	1.2	17.2	3.7	13.7%	4.4%
2027	167.5	7.1	8.6	1.2	19.4	4.8	17.0%	5.5%
2037	327.1	11.5	16.3	1.3	24.5	7.5	25.2%	8.2%
2047	525.4	15.8	25.9	1.5	30.0	10.5	32.3%	10.5%
2057	747.9	19.4	36.6	1.8	36.1	13.3	37.7%	12.1%
2067	976.6	21.5	47.9	2.2	43.5	15.8	40.5%	12.9%
2077	1,135.5	27.9	57.2	2.6	53.6	15.8	38.5%	12.4%

Table C.4. Projected Contributors & Pensioners, *Pessimistic Scenario*

Year	# of Contributors	# of Pensioners					Total # of Pensioners	Ratio of Contributors to Pensioners
		Age	Invalidity	Survivors	Assistance	Death & Disablement		
2015	28,126	3,131	335	861	473	85	4,885	5.8
2016	28,450	3,474	343	928	449	85	5,279	5.4
2017	28,788	3,854	359	931	425	89	5,658	5.1
2018	28,232	4,181	371	1,132	404	95	6,182	4.6
2019	28,343	4,521	387	1,159	391	100	6,558	4.3
2020	28,453	4,857	400	1,201	380	105	6,943	4.1
2021	28,562	5,188	420	1,242	368	112	7,330	3.9
2022	28,692	5,548	437	1,278	358	118	7,739	3.7
2023	28,806	5,927	455	1,309	348	124	8,162	3.5
2027	28,983	7,486	526	1,371	316	149	9,847	2.9
2037	28,341	10,609	675	1,617	275	214	13,391	2.1
2047	27,186	12,387	723	1,814	258	261	15,442	1.8
2057	25,542	13,258	692	1,885	247	282	16,363	1.6
2067	23,834	13,617	606	1,875	236	280	16,613	1.4
2077	22,675	12,654	605	1,751	227	300	15,538	1.5

Table C.5. Projected Cash Flows & Reserves, *Optimistic Scenario* (millions of \$'s)

Year	Cash Inflows				Cash Outflows				Surplus/ (Deficit)	Reserves	
	Contribution Income	Investment Income	Other Income	Total	Benefits & Pensions	Admin. Expenses	Loss Provisions	Total		End of Year	R-E Ratio
2015	90.6	56.6	4.9	152.2	67.3	14.4	29.2	111.0	41.2	1,365	12.3
2016	94.2	51.8	16.8	162.8	75.2	14.1	15.9	105.2	57.6	1,423	13.5
2017	94.7	48.7	15.0	158.4	83.7	14.2	1.4	99.3	59.1	1,482	15.1
2018	100.0	44.3	0.7	145.1	94.4	15.0	0.0	109.4	35.7	1,518	13.9
2019	103.5	52.9	0.7	157.1	101.8	15.4	0.0	117.1	40.0	1,558	13.3
2020	107.1	61.9	0.7	169.7	114.4	15.8	0.0	130.1	39.6	1,597	12.3
2021	110.6	63.3	0.8	174.6	124.5	16.1	0.0	140.6	34.0	1,631	11.6
2022	114.0	64.5	0.8	179.3	135.6	16.5	0.0	152.1	27.2	1,658	10.9
2023	119.3	65.5	0.8	185.6	147.8	17.1	0.0	164.8	20.8	1,679	10.2
2027	134.8	65.8	0.9	201.5	201.7	18.5	0.0	220.2	(18.6)	1,669	7.6
2037	173.8	30.3	1.2	205.4	362.0	21.4	0.0	383.5	(178.1)	684	1.8
2047	219.7	(87.9)	1.5	133.3	556.1	26.8	0.0	582.9	(449.5)	(2,468)	(4.2)
2057	275.4	(346.0)	1.9	(68.6)	792.5	33.6	0.0	826.1	(894.7)	(9,272)	(11.2)
2067	346.7	(821.9)	2.4	(472.8)	1,044.0	42.2	0.0	1,086.2	(1,559.0)	(21,742)	(20.0)
2077	445.7	(1,593.3)	3.1	(1,144.5)	1,237.5	54.3	0.0	1,291.8	(2,436.3)	(41,850)	(32.4)

For 2015 to 2017, "Other Income" includes "Other Comprehensive Income" that does not flow through the Income & Expenditure Statement
 Negative reserves indicate the indebtedness of the Fund and negative investment income is the current cost of servicing that debt.

Table C.6. Projected Benefit Expenditure— *Optimistic Scenario* (millions of \$'s)

Year	Pensions, Grants & Benefits						Benefits as a % of:	
	Age	Invalidity	Survivors	Assistance	Short-term	Emp. Injury	Insurable Wages	GDP
2015	46.4	3.2	3.3	1.5	11.5	1.4	8.2%	2.7%
2016	52.7	3.7	3.5	1.4	12.4	1.6	8.8%	2.9%
2017	59.9	3.7	3.7	1.3	13.6	1.5	9.7%	3.1%
2018	68.9	4.0	4.2	1.2	14.5	2.5	10.1%	3.3%
2019	75.1	4.2	4.5	1.2	15.1	2.6	10.5%	3.4%
2020	85.8	4.6	5.2	1.2	15.7	2.9	11.4%	3.7%
2021	94.4	4.9	5.7	1.2	16.2	3.2	12.0%	3.8%
2022	104.1	5.2	6.2	1.2	16.8	3.4	12.7%	4.0%
2023	114.3	5.5	6.7	1.2	17.6	3.7	13.2%	4.2%
2027	161.4	6.9	9.0	1.2	20.1	4.8	16.0%	4.9%
2037	302.0	11.0	16.9	1.3	26.1	7.5	22.2%	6.8%
2047	473.2	15.2	26.7	1.5	32.9	10.6	27.0%	8.1%
2057	683.8	19.2	38.0	1.8	41.3	13.8	30.7%	9.1%
2067	906.4	22.4	50.6	2.2	52.0	17.1	32.1%	9.3%
2077	1,061.0	30.9	62.4	2.6	66.8	17.1	29.6%	8.6%

Table C.7. Projected Contributors & Pensioners, *Optimistic Scenario*

Year	# of Contributors	# of Pensioners					Total # of Pensioners	Ratio of Contributors to Pensioners
		Age	Invalidity	Survivors	Assistance	Death & Disablement		
2015	28,126	3,131	335	861	473	85	4,885	5.8
2016	28,450	3,474	343	928	449	85	5,279	5.4
2017	28,788	3,854	359	931	425	89	5,658	5.1
2018	28,599	4,173	369	1,141	404	94	6,181	4.6
2019	28,786	4,504	383	1,177	391	99	6,554	4.4
2020	28,971	4,829	395	1,228	380	105	6,936	4.2
2021	29,156	5,147	414	1,280	368	111	7,320	4.0
2022	29,366	5,493	430	1,326	358	117	7,724	3.8
2023	29,559	5,856	447	1,368	348	123	8,142	3.6
2027	30,043	7,338	516	1,473	316	149	9,793	3.1
2037	30,231	10,155	666	1,829	275	217	13,142	2.3
2047	30,060	11,600	720	2,104	258	268	14,951	2.0
2057	29,338	12,686	705	2,226	247	297	16,162	1.8
2067	28,559	13,369	654	2,260	236	311	16,830	1.7
2077	28,370	12,619	694	2,195	227	351	16,086	1.8

Appendix D Income & Expenditure, 2015–17

	2015	2016	2017
Income			
Contribution Income	90,643,594	94,235,386	94,746,932
Investment Income	56,629,585	51,835,717	48,681,474
investment Recoveries	3,484,314	12,803,347	-
Other Income	2,299,269	742,678	732,370
Total Income	153,056,762	159,617,128	144,160,776
Expenditure			
Benefits			
Sickness Benefit	8,213,303	9,127,818	10,051,774
Maternity Allowance	2,342,172	2,327,842	2,604,546
Maternity Grant	244,800	223,650	247,950
Funeral Grant	723,906	724,814	657,269
Age Pension	45,307,131	51,443,802	58,595,170
Invalidity Pension	3,183,683	3,655,972	3,731,870
Survivors' Pension	3,346,047	3,470,707	3,678,881
Age Grant	1,093,312	1,259,973	1,324,545
Age Assistance	1,001,908	928,513	881,105
Invalidity Assistance	466,381	421,693	423,841
Medical Expenses	64,153	135,773	123,280
Injury Benefit	486,550	724,405	510,876
Disablement Grant	41,650	26,471	32,017
Disablement Benefit	519,606	528,009	596,456
Death Benefit	203,449	188,431	184,963
Travel Expenses	8,657	9,814	8,548
Burial Grant	4,000	-	-
Constant care	27,235	27,235	27,235
Total Benefit Expenditure	67,277,943	75,224,922	83,680,326
Administrative Expenditure	14,441,580	14,098,186	14,192,661
Investment Loss Provision	29,245,361	15,897,262	1,411,403
Total Expenditure	110,964,884	105,220,370	99,284,390
Excess of Income over Expenditure	42,091,878	54,396,758	44,876,386
Other Comprehensive Income	(851,958)	3,219,816	14,224,666
Social Security Reserves at End of Year	1,365,268,504	1,422,885,078	1,481,986,130
Short-term Benefits Branch	120,105,216	125,536,251	131,031,067
Long-term Benefits Branch	1,029,353,212	1,063,381,963	1,088,835,313
Employment Injury Benefits Branch	203,006,264	217,943,237	231,871,457
Revaluation Reserve	12,803,812	16,023,628	30,248,294
Provident Fund Reserves	28,292,468	29,308,289	30,120,671
Staff Supplemental Benefits Reserve	10,621,780	10,949,259	10,429,255

Appendix E Benefit Experience & Analysis

Table E.1. Summary Branch Experience (% of Insurable Wages)

Benefit Branch	Contributions Allocated	Total Expenditure [^]		
		2015	2016	2017
Short-term	2.0%	1.71%	1.73%	1.86%
Employment Injury	1.0%	0.27%	0.29%	0.27%
Long-term	8.0%	7.94%	8.40%	9.24%
All Branches	11.0%	9.92%	10.42%	11.36%

[^] Excludes provision for loss on investments

Table E.2. Benefit Branch Reserves Funding and Expenditure Levels

Benefit Branch	Year-end Reserve (in millions)		Reserve-Expenditure Ratio [^]		
	2014	2017	2014	2017	Suggested Target
Short-term	\$116.8	\$131.0	8.8	8.2	1.0
Employment Injury	\$189.6	\$231.9	82.8	101.4	2.0
Long-term	\$1,004.0	\$1,088.8	16.8	13.7	N/A

[^] Excludes provision for loss on investments

Table E.3. Pensions In Payment, Awarded & Terminated, 2014- 2017

Pension Type	Paid in	Awarded	Terminated	Paid in	Average Monthly Pension	
	Dec. 2014	2015-2017	2015-2017	Dec. 2017	December 2014	December 2017
Age	2,860	1,251	257	3,854	\$1,146	\$1,267
Invalidity	318	258	217	359	\$829	\$866
Survivors	917	209	31	1,095	\$274	\$280
Assistance	352	135	62	425	\$255	\$255

Table E.4. LTB Branch Expenditure As % of Insurable Wages, 2015-2017

Pension Type	2015	2016	2017
Age Pension	5.50%	6.00%	6.80%
Invalidity Pension	0.39%	0.43%	0.43%
Survivors' Pension	0.41%	0.41%	0.43%
Age Grant	0.13%	0.15%	0.15%
Age Assistance	0.12%	0.11%	0.10%
Administrative Expenses	1.35%	1.26%	1.27%
Total	7.88%	8.35%	9.19%
Total Benefits (millions of \$'s)	54.40	61.18	68.64

E.2. Short-term Benefit Experience, 2015 – 2017

Table E.5. Sickness Benefit Experience, 2015 – 2017

Year Ended	# Claims Awarded per 1,000 Insureds	Average benefit Duration (days)	Average Weekly Benefit	Cost as a % of Insurable Wages
2015	387	11.4	672	1.00%
2016	405	11.5	657	1.07%
2017	442	11.2	562	1.17%

Table E.6. Maternity Allowance Experience, 2015 – 2017

Year Ended	# Claims Awarded per 1,000 Insureds	Average Allowance Duration (days)	Average Weekly Allowance	Cost as a % of Insurable Wages
2015	18.5	75.3	465	0.28%
2016	16.4	77.7	550	0.27%
2017	17.8	77.6	501	0.30%

Table E.7. Maternity Grant & Funeral Grant Experience, 2015 – 2017

Year Ended	# Births	# Grants Awarded	Cost as a % of Ins. Wages	# Deaths	# Grants Awarded	Cost as a % of Ins. Wages
2015	632	531	0.03%	370	277	0.09%
2016	677	482	0.03%	402	278	0.08%
2017	647	527	0.03%	376	252	0.08%

Table E.8. Administrative & Total Expenditure - STB Branch

Year Ended	As a % of Insurable Wages			Total Branch Expenditure
	Benefits Expenditure	Admin Expenditure	Provision For Loss on Investments	
2015	1.40%	0.31%	0.63%	2.34%
2016	1.45%	0.29%	0.32%	2.06%
2017	1.57%	0.28%	0.03%	1.89%

With an allocation of 2.0% of insurable earnings plus investment returns, the STB Branch incurred large surpluses each year.

E.3. Injury Benefit Experience, 2015 – 2017

Table E.9. Employment Injury Benefit Experience, 2015 – 2017

Year Ended	# Claims Awarded per 1,000 Insureds	Average Benefit Duration (days)	Average Weekly Benefit	Cost as a % of Insurable Wages
2015	15	15.1	509	0.06%
2016	18	16.4	573	0.08%
2017	16	14.6	522	0.06%

Table E.10. Medical And Disablement Grant Experience, 2015 – 2017

Year Ended	# Medical Claims Awarded	Cost as a % of Ins. Wages	# Travel Expenses Awarded	Cost as a % of Ins. Wages	# Disablement Grants Awarded	Cost as a % of Ins. Wages
2015	184	0.01%	11	0.001%		0.005%
2016	234	0.02%	8	0.001%		0.003%
2017	199	0.01%	5	0.001%		0.004%

Table E.11. Disablement & Death Benefits, Awards & Pensions In Payment, 2015 – 2017

Year Ended	Disablement Pensions			Death Benefit		
	# Pensions Awarded	Pensions In Payment (December)	Payments as a % of Insurable Wages	# Pensions Awarded	Pensions In Payment (December)	Payments as a % of Insurable Wages
2015	86	760	0.06%	1	625	0.02%
2016	85	822	0.06%	0	648	0.02%
2017	89	888	0.07%	0	671	0.02%

Table E.12. Administrative & Total Expenditure – EIB Branch

With an allocation of 1% of insurable earnings plus investment returns, the EIB Branch incurred large surpluses in each year.

Year Ended	As a % of Insurable Wages			Total Branch Expenditure
	Benefits Expenditure	Admin Expenditure	Provision For Loss on Investments	
2015	0.16%	0.11%	0.22%	0.49%
2016	0.19%	0.10%	0.11%	0.40%
2017	0.17%	0.09%	0.01%	0.28%

Appendix F New Approach To Self-Employed Contributions

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|-----------------------------|--|
| 1. Registration & Education | <ul style="list-style-type: none"> • Each self-employed person has a unique SS # • Upon registration (or re-registration) he/she shall indicate what income band he/she is usually in. There shall be 4 income bands. <ul style="list-style-type: none"> ○ A: 95% or more of the earnings limit (100%) ○ B: 75% to 95% of the earnings limit (80%) ○ C: 50% to 75% of the earnings limit (60%) ○ D: less than 50% of the earnings limit (40%) <ul style="list-style-type: none"> ▪ For each of these bands there shall be an implicit average insurable wage. The percentage in the brackets is the proportion to be applied to the wage ceiling to determine the implicit average insurable wage. • Unless changed by the individual (as permitted by certain guidelines) this income band will remain in effect until pension age. No changes to a higher band should be allowed after age 55. • As the earnings limit changes each year self-employed persons shall be informed of the expected contributions payable during the year for each band. |
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| 2. Contribution payments | <ul style="list-style-type: none"> • No forms required • No need to pay for any particular month or indicate how many weeks were worked • Pay in cash, by direct deposit, send a cheque or any other permitted form of payment indicating that it is to be applied to his/her "account" or SS #. (New options for paying contributions at banks and bank machines should be considered) A receipt for the amount paid shall be provided. The receipt will also indicate the total amount contributed in the current year and the target amount expected for the remainder of the year. • All contributions received during a calendar year are applied to that year only. There shall be no paying for previous years. • The self-employed person is never considered to be "in arrears" during the year. For the purpose of providing Letters of Good Standing, for example, the contributions made in the previous calendar year shall be used. • If actual contributions exceed the maximum amount due for the year, the excess shall be carried over to the next year. |
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3. Year-end internal calculations	<ul style="list-style-type: none"> Using the amount contributed during the previous year and the income band selected, obtain the number of weeks paid for the year as: <ul style="list-style-type: none"> Total contributions made / 10% / implicit avg. insurable wage Self-employed persons shall be sent a statement early in the new year indicating the number of weeks of contributions made for the previous year and their eligibility to receive benefits during the current year.
4. Short-term benefits	<ul style="list-style-type: none"> Similar to what is currently in place but instead the required contributions must have been made in the previous calendar year
5. Long-term benefits	<ul style="list-style-type: none"> Same approach as currently in place: <ul style="list-style-type: none"> Must have made minimum # of contributions to qualify Pension amount calculated using average insurable earnings and benefit % based on # of contributions made

Following are examples of how the number of contribution weeks shall be determined for two different self-employed persons. For this illustration the wage ceiling is assumed to be \$1,500 per week.

	Self-Employed #1	Self-employed #2
Income Band	Band A (at or above wage ceiling)	Band C (50% to 75% of wage ceiling)
Implicit Weekly Insurable Wage	\$1,500 per week	\$900 per week
Max. Contributions Expected	$\$1,500 \times 52 \times 10\% = \$7,800$	$\$900 \times 52 \times 10\% = \$4,680$
Actual Contributions Paid in the Year	\$5,000	\$4,000
# Contribution Weeks Made	$\$5,000 / 10\% / \$1,500 = 33 \text{ wks}$	$\$4,000 / 10\% / \$900 = 44 \text{ wks}$

For the year illustrated above, the database shall reflect that Self-employed # 1 made 33 weekly contributions for the year at an average insurable wage of \$1,500 per week.

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