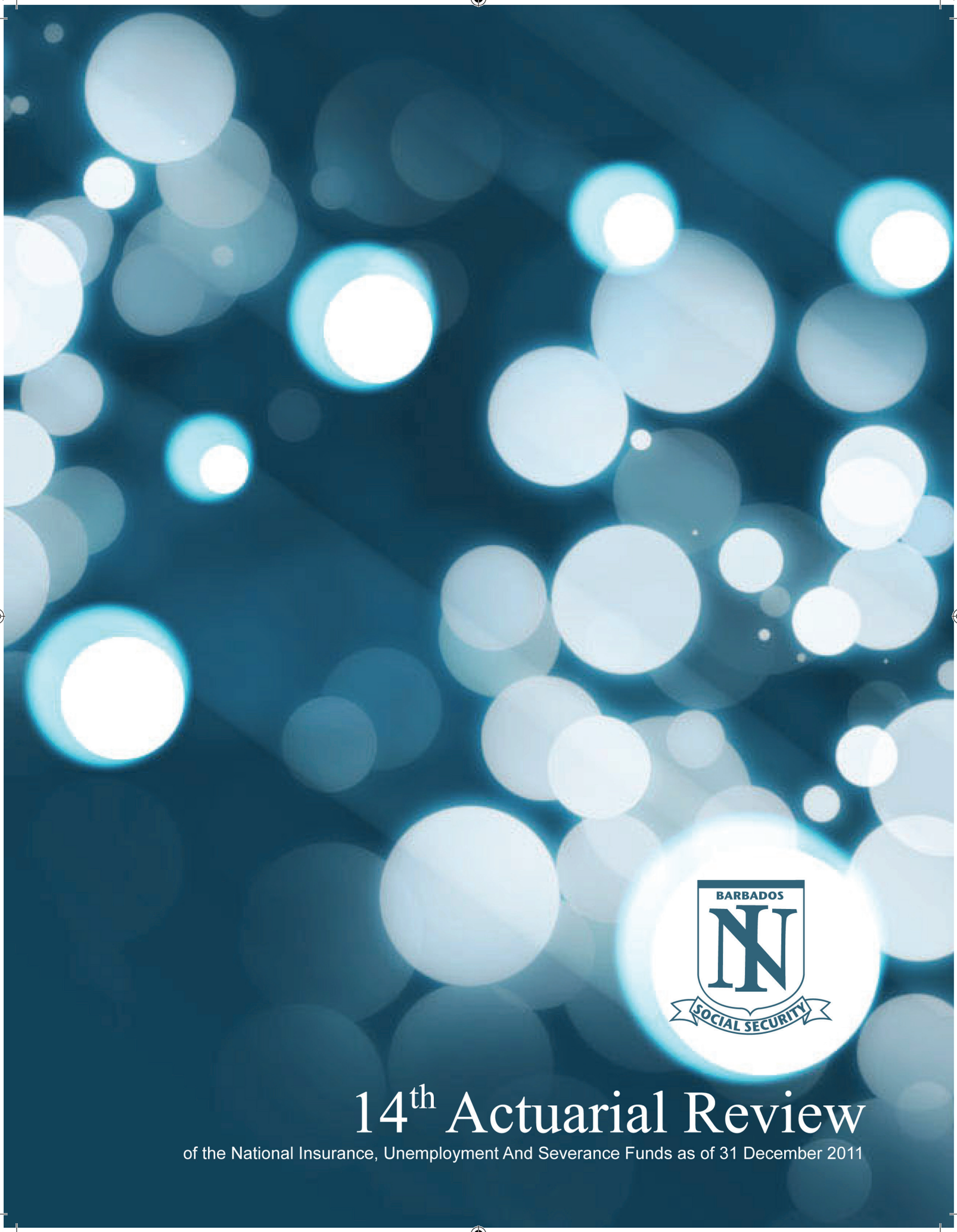

14th Actuarial Review

of the National Insurance, Unemployment And Severance Funds as of 31 December 2011

National Insurance Office
Frank Walcott Building
Flodden, Culloden Road
St. Michael, Barbados, W.I.
Tel: (246) 431-7400
Fax: (246) 431-7408

January 27th, 2014

Sen. Dr. The Hon. Esther Byer-Suckoo
Minister of Labour & Social Security and Human Resource Development
3rd Floor West
Warrens Office Complex
Warrens
St. Michael

Dear Minister:

In accordance with Section 34 of the National Insurance and Social Security Act, which requires that an actuarial review of the National Insurance Fund be conducted every three years, I am pleased to submit the report of the 14th Actuarial Review, prepared as at December 31st, 2011.

This review has been conducted by Mr. Derek Osborne of Horizonow Consultants Ltd.

Yours sincerely,

Dr. Justin Robinson
Chairman, National Insurance Board

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Abbreviations and Acronyms

GDP	Gross Domestic Product
IE	Insurable Earnings
ILO	International Labour Office
IPS	Investment Policy Statement
ISSA	International Social Security Association
NI	National Insurance
NIB	National Insurance Board
NIF	National Insurance Fund
NIS	National Insurance Scheme
OECD	Organisation for Economic Co-operation & Development
PAYG	Pay-as-you-go
STB	Short-term Benefits
TFR	Total Fertility Rate

Introduction

The Barbados National Insurance Scheme (NIS) began operations in June 1967. It currently covers all employed and self-employed persons and offers five main types of social security benefits with payments from three separate funds. The National Insurance Fund covers short-term benefits, long-term benefits or pensions and employment injury benefits, while the Unemployment Fund and Severance Fund cover unemployment benefits and severance payments, respectively. All benefits are financed by contributions which are levied on employment earnings up to a wage ceiling and are paid by employers, employees and self-employed persons. Funds that have accumulated in previous years that are not yet required for the payment of benefits are invested locally, regionally and internationally in various types of securities and properties.

This is the report of the 14th Actuarial Review of National Insurance, Unemployment and Severance Funds and it is being prepared as of December 31, 2011, three years after the 13th Actuarial Review. Section 34 of the National Insurance and Social Security Act requires that such reviews be conducted at three year intervals. The preparation of this report was delayed due to the unavailability of financial and statistical data. Although some statistical data were incomplete and financial statements unaudited, the data provided is considered sufficient for the purpose of this review.

The main purpose of periodic actuarial reviews is to determine if the social security system in Barbados 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 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 National Insurance Act, periodic actuarial reviews should be conducted. The next Actuarial Review of the three Funds is due as at December 31, 2014.

This report was finalised two years after the review date. The actuary visited Barbados in September 2013 and October 2013 and held discussions with the members of the Board, the Director, representatives of the Central Bank and Barbados Statistical Service, and staff of the National Insurance Office. He wishes to thank Mr. Ian Carrington, Director, Derek Lowe, Marketing & Research Officer, and all other members of the National Insurance staff who assisted with this review.

December 31st, 2013

Executive Summary

National social security systems make promises to former and current workers that extend beyond 60 years. It is therefore important that these systems are well designed, well governed and properly administered. Periodic actuarial reviews of the National Insurance, Unemployment and Severance Funds provide a comprehensive assessment of the current and projected state of Barbados' social security system. 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 actuarial review analyses experience between 2009 and 2011 and presents prospects for the three Funds. While the Funds have different objectives and financing mechanisms, the success of any social security system is closely linked to the strength of the local economy. During the 3-year review period, the Barbadian economy contracted, unemployment increased, the number of NIS contributors and contribution income declined while payouts for most benefits increased. Contributing to the decline in contributions was increasing non-compliance among employers and self-employed persons. While the yield on investments remained strong, inflation was equally as high resulting in no real rate of return on reserves. Overall, the three Funds had varying experiences:

» For the National Insurance Fund, the gap between contributions and expenditure narrowed, and income and expenditure were generally in line with projections of the 13th Actuarial Review. As at December 2011 total reserves were $3.8 billion, 7.8 times expenditure in 2011.

» The Unemployment Fund paid out significantly more than combined contribution and investment income resulting in total reserves declining from $127.8 million to $85.4 million between year-ends 2008 and 2011.

» For the Severance Fund, reserves grew from $112.6 million to $152.0 million over the same period as benefit payments remained very low.

National Insurance Fund

This report's assessment of National Insurance policy and design indicators suggests that current contribution and benefit provisions generally provide a very good level of benefit adequacy and income protection to most workers and pensioners. The automatic annual adjustments of the earnings limit and pensions have been effective in replacing most of the price inflation felt by pensioners and maintaining adequate insurance coverage for higher paid workers. The heavy concentration of investments in Barbados Government and other public sector securities presents growing concerns for the Fund's long-term sustainability. The key risk factor here is whether the Fund will receive cash when Debentures and Treasury Notes will have to be liquidated to meet current expenditure.

For this Review three sets of 60-year projections of Barbados' population and National Insurance Fund finances have been performed so that a range of reasonable prospects for the Fund may be assessed. These projections are based on there being no changes to the current contribution rate

and legislated benefit rules. Given the uncertainty in projecting such an extended period, the timing of certain events and the rates that will apply are presented as ranges.

1. Total expenditure will exceed contribution income each year.

2. Total expenditure will first exceed total income between 2028 and 2035 in the Pessimistic and Best Estimate scenarios.

3. The Fund will be depleted between 2045 and 2056 in the Pessimistic and Best Estimate scenarios, but not within the next 60 years under the Optimistic Scenario.

4. The pay-as-you-go rate in 2071 will be between 23.5% and 34.7%.

5. The average long-term cost of benefits over the next 60 years, often referred to as the general average premium, is between 20.9% and 26.0%.

A sustainable national pension is one that over the long term, delivers on its financial promises in such a way that the financial burden is borne equitably by participants. These results indicate that the National Insurance Fund may not be financially sustainable over the long-term under two of the three scenarios, but will be very well funded if there is sustained economic growth. There is, however, no need for panic or immediate action as the projections above are consistent with the partially funded nature of a national pension system.

This report was finalised in December 2013 and thus the recommendations presented below are made with the benefit of actual experience in 2012 and most of 2013. The state of NIS' finances in 2013 can be summarised as follows:- while total expenditure now exceeds contributions and no contribution rate increase is anticipated, deficits are not expected before the next 25 years and there are significant reserves to sustain payments for the medium term. The current economic climate can be described as being in the midst of a sluggish recovery with weakening public finances, relatively high interest rates and moderate inflation.

Major reforms to a national pension system should not be a regular occurrence. Thus, given that extensive reforms were made ten years ago, and some of them are still being phased in, the recommendations in this report focus more on operational issues than on contribution and benefit provisions. All recommendations, however, are based on the overriding goal of further enhancing coverage, maintaining or improving benefit adequacy while enhancing long-term sustainability. These recommendations are:

1. To enhance coverage:
   a. Implement a simple and attractive means by which self-employed persons can contribute and benefit from the NIF.

2. To enhance benefit adequacy:
   a. For Old-Age, consider removing the requirement that the benefit shall not be awarded at an early age if the calculated amount is less than the minimum pension.
   b. Consider awarding Old Age and reduced Survivors pensions to widow(er)s who meet the eligibility conditions to both pensions. An analysis of the financial impact of this change should be conducted first.

3. To enhance sustainability:
   a. Increase investment diversification with goals of reducing the portion of the Fund held in Government of Barbados to 50% over 5 years and increasing the portion held in overseas investments.
   b. Take steps to improve contribution compliance.

4. To enhance administrative efficiency:
   a. Make maximum use of the capabilities of the information technology systems and/or upgrade current systems so that service levels may be improved.
   b. Ensure that all key positions with the National Insurance Office are filled.

Unemployment & Severance Funds

Unemployment Fund experience has been in line with what is expected during recessionary periods – contributions decrease, benefit payments increase and reserve levels fall. Unemployment benefit provisions and the flexibility available to extend the maximum duration for a limited period have proven that current rules adequately meet the needs of unemployed persons.

Short-term projections of the Unemployment Fund indicate that reserves could be depleted as soon as 2016 if the contribution rate remains at 1.5%. Even under a scenario of increasing contribution income and declining benefit costs, the Fund will be depleted by 2023.

The Severance Fund, meantime, has excess reserves and will continue to grow with the current ½% contribution rate and benefit provisions. The payment and reimbursement rules of the Severance Payments Fund, however, do not appear to be in line with prevailing employment practices and behaviour.

Following are recommendations for the Unemployment and Severance Funds:

(i) Increase the contribution rate for the Unemployment Fund by ½% (to 2%) or inject $50 million into the Fund. Such an injection could be a transfer from the Severance Fund, if legally possible.

(ii) Temporarily suspend the ½% contribution rate to the Severance Payment Fund.

(iii) Perform a comprehensive review of the provisions of the Severance Payments Act and determine what amendments are required to create a scheme that better meets the needs of both employers and workers when redundancy either occurs or is being considered.

(iv) Establish written investment policy statements for both the Unemployment and Severance Funds. These could be included in separate sections of the National Insurance Fund's Investment Policy.

Good Governance Guidelines

In 2011, the International Social Security Association (ISSA) published the "*ISSA Good Governance Guidelines for Social Security Institutions*." These Guidelines present a governance framework that spans a range of governance issues. It recognizes accountability, transparency, predictability, participation and dynamism as core good governance principles. It recommends qualified persons be appointed to serve on Boards and in leadership positions and that there be clear roles for the Minister, the Board and management. These ISSA Good Governance Guidelines, prepared specifically for social security schemes, can help ensure that the NIS is a well governed, efficient and sustainable system. It is recommended that similar guidelines, tailored to the Barbados NIS, be implemented at all levels.

With reserves of over $4 billion the NIF may appear as a suitable provider of financing for investment projects that the Government considers necessary to spur economic resurgence. 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. For the National Insurance Fund to consistently deliver on its future obligations without having to levy high contribution rates in the future, a firm commitment to implementing and following a good governance framework, especially as it relates to investments, is required.

Section I
National Insurance Fund

Chapter 1 - Activities & Experience Since 13th Actuarial Review

1.1 Amendments to Act & Regulations

Each year National Insurance & Social Security Orders that facilitate the annual, automatic adjustments to the earnings limit, pensions and grants are signed by the Minister with responsibility for National Insurance. For the earnings limit, annual adjustments represent the change in national wage index for the previous year while for pensions and benefits, the lower of the previous 3-years average price inflation and previous 3-years average change in wage index is used. The following table shows the recent changes to earnings limits, minimum contributory pension and pension adjustments.

Change Effective	Monthly Earnings Limit (Ceiling)	Increases to Earnings Limit	Minimum Contributory Pension (per week)	Increases To Pensions & Grants
January 2009	$3,720	4.7%	$148	4.18%
January 2010	$3,900	4.8%	$155	4.82%
January 2011	$4,090	4.9%	$163	4.84%
January 2012	$4,180	2.2%	$170	4.01%

Most of the pension reforms enacted in 2006 have been fully phased in with two exceptions:

i. the normal pension age that is currently 66 will increase to 66½ in 2014 and to 67 in 2018.

ii. Until 2022, calculations for Old Age Contributory Pensions will use a combination of the "old" and "new" bases.

Further details of all contribution and benefit provisions can be found in Appendix A.

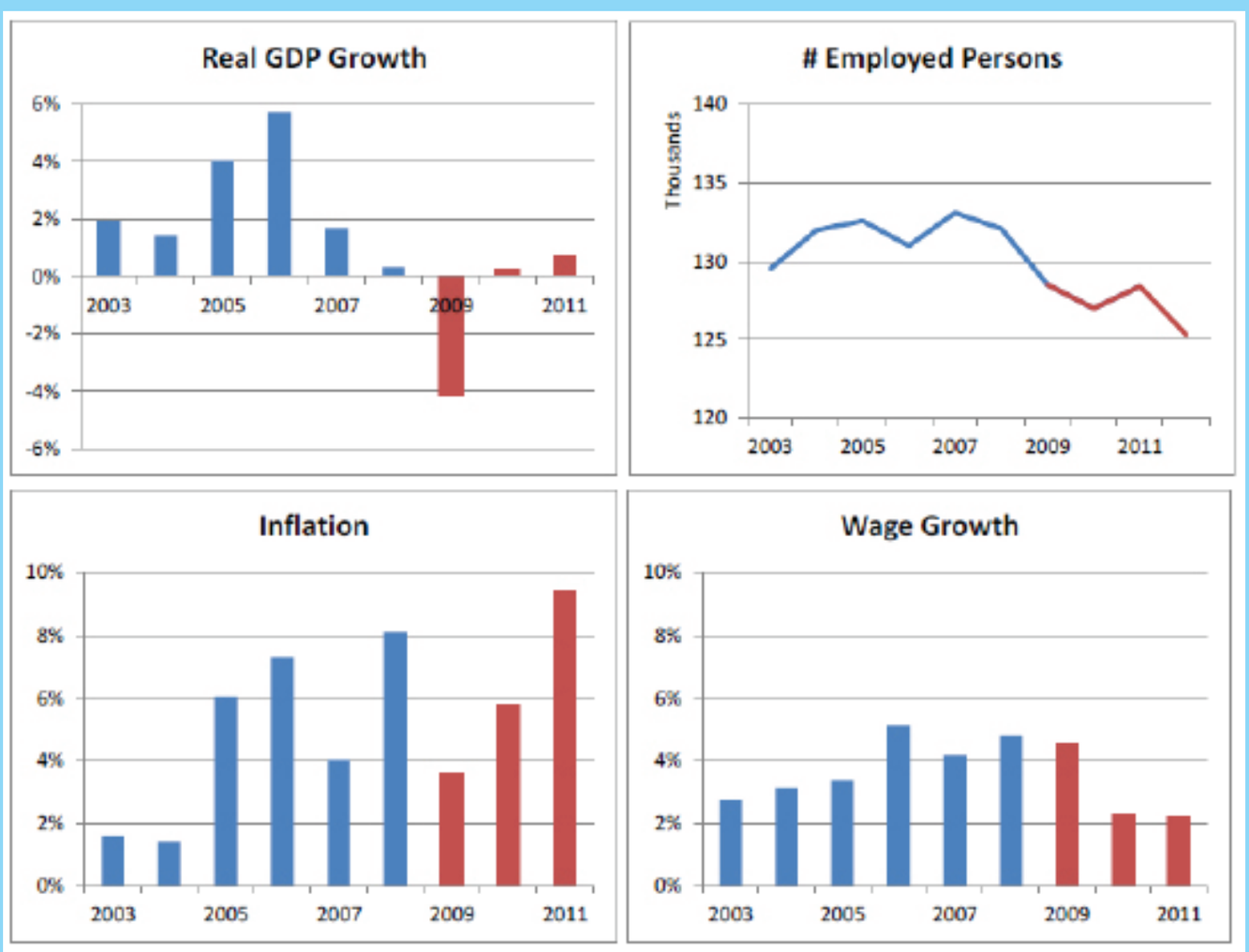
1.2 Economic Experience

The NIF's two sources of income, contributions and earnings on investments, are closely linked to economic performance and labour market changes. Some benefits are also affected by economic changes. For example, more people are likely to claim Old Age Contributory and Invalidity pensions if they lose their job and cannot find a new one. Economic conditions, therefore, directly impact NIF finances.

As shown in the charts in Figure 1.1, Barbados' economy contracted by 4% in the first year of the review period followed by two years of minimal real growth. Average GDP growth in the 3-year period was -3.1% per annum. As a consequence of the economic downturn, employment levels further contracted between 2008 and 2011 from 132,000 to 128,400.

Inflation during the review period was high, averaging 6.3% per annum, while the increase in average wages was only 3.0%. Real wages, therefore, decreased during the review period.

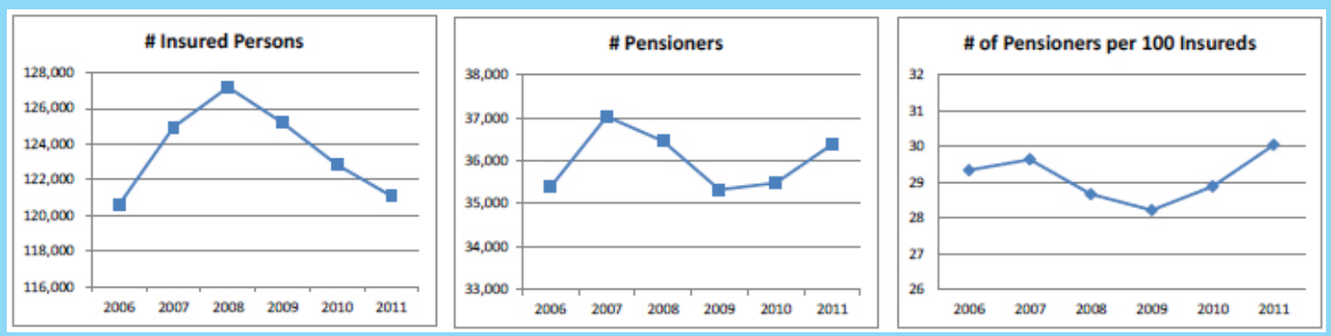
Figure 1.1. Key Economic Indicators, 2003 to 2011



1.3 National Insurance Fund Experience

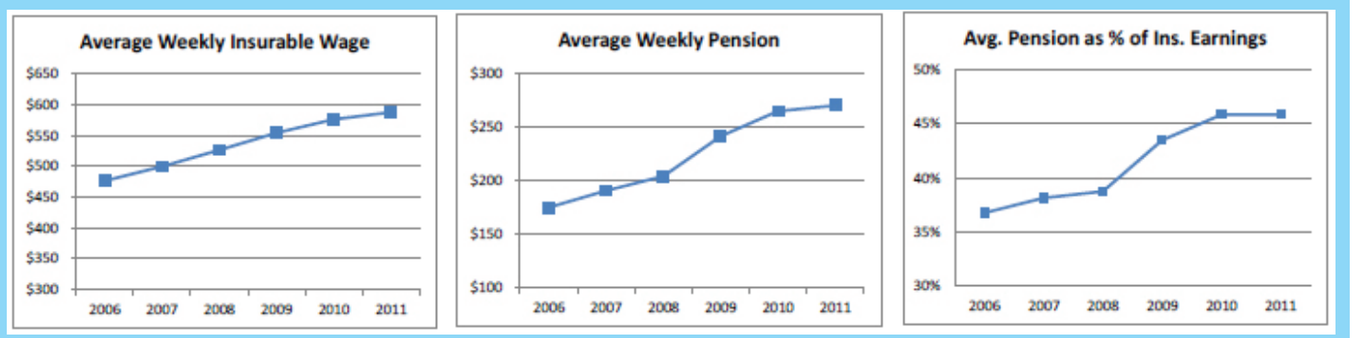
In line with recent economic patterns, the number of insured persons making contributions declined. (Figure 1.2 below) While it is expected that the number of pensions in payment would increase gradually each year, there was a reduction in 2008 and 2009 and increases since then. Data issues may account for some of this volatility. The key result from the reduction in contributors and change in pensioners is a small increase in the demographic ratio (number of pensioners per 100 insured persons) from 28.7 to 30.0 between 2008 and 2011.

Figure 1.2. Contributors & Pensioners, 2006 to 2011



Both the average insurable wage and the average pension in payment increased between 2008 and 2011. (Figure 1.3 below) The larger than average increase in pensions in 2009 was due to a special adjustment to minimum pensions in September 2008. Average pensions divided by average insurable earnings is often referred to as the replacement ratio. This ratio increased between 2008 and 2011 indicating that average pensions increased at a faster rate than average insurable earnings.

Figure 1.3. Average Insurance Wages & Pensions in Payment, 2006 to 2011



The following table provides summary income and expenditure amounts for 2009 to 2011. A more detailed version of the National Insurance Fund finances for these years may be found in Appendix D.

Table 1.1. Summary of NIF Finances, 2009 – 2011 (millions of $'s)

	2009	2010	2011
Income			
Contributions	523.3	564.7	541.6
Investment	204.0	195.0	213.9
Other	4.1	4.9	3.8
Total	731.4	764.6	759.3
Expenditure			
Benefits	398.9	461.8	463.1
Administrative	28.2	28.6	28.0
Total	**427.1**	**490.4**	**491.1**
Excess of Income over Expenditure	**304.3**	**274.1**	**268.2**
Change in Revaluation Surplus	**(10.4)**	**(15.6)**	**25.2**
Reserves (end of year)	**3,266.7**	**3,525.3**	**3,818.8**

Notes: Totals may be off due to rounding

Key highlights of income and expenditure are:

(i) Contributions fell in 2011 due to a reduction in the workforce and increasing contribution delinquencies.
(ii) Investment income and administrative costs fluctuated only slightly.
(iii) Benefit expenditure increased significantly in 2010 with very little increase in 2011.
(iv) Administrative costs were relatively stable.
(v) The excess of income over expenditure decreased each year.
(vi) Total reserves grew from $2.97 billion at the end of 2008 to $3.82 billion at the end of 2011. Revaluation Surplus represents the appreciation in the price of local equities relative to the initial purchase price. The change in Revaluation Surplus, therefore, represents unrealised gains/ (losses) on local equities.

1.4 Experience Compared with Projections of 13th Actuarial Review

In the 13th Actuarial Review, projections were prepared under three scenarios – *Best Estimate, Low Dependency* (optimistic) and *High Dependency* (pessimistic). Shown below is a comparison of actual cumulative experience over the 3-year period with the projections of the Best Estimate Scenario.

Table 1.2. Projections from 13th Actuarial Review Compared With Actual Experience

	2009-2011 Projected (millions of $'s)	2009-2011 Actual (millions of $'s)	Variance
Contribution Income	$1,658	$1,630	1.7% below
Investment Income	$598	$613	2.5% above
Benefit Expenditure	$1,280	$1,324	3.4% above
Administrative Expenditure	$121	$85	29.8% below
2011 Year-end Reserves	$3,758	$3,819	1.6% above

With the exception of administrative costs, income and expenditure were generally in line with expectation. Actual administrative costs were well below projected as the costs of the IT system installed in 2004 were depreciated more quickly than anticipated.

The variance in 2011 year-end reserves is greater than the cumulative differences in the four income and expenditure items would suggest due to the introduction of a "Revaluation Surplus" after the 13th Actuarial Review was completed. 2008 reserves were increased by $84.6 million which represented the difference between cost and market prices for local equities.

1.5 Investments

At the end of 2011, National Insurance investments stood at $3.7 billion, up from $2.8 billion at the end of 2008. The relationship between investments and reserves, which measures how efficiently available funds are invested has been fairly good, averaging 97% over the 3-year review period. At the end of 2011, NIF investments stood at 44% of GDP.

During the review period, the average yield on investments was 6.6% and the average yield on reserves was 6.2%. With inflation averaging 6.3% per annum, the average real rate of return on reserves was -0.1%.

The following table provides a summary of the investment mix of the National Insurance Fund at year-ends 2008 and 2011.

Table 1.3. Summary of Investments, Year-end 2011 & 2008 (millions of $'s)

Investment Category	2011		2008	
	$'s	%	$'s	%
Treasury Bills & Notes	965.6	26.1	593.0	21.8
Debentures	1,270.6	34.3	960.6	35.4
Bonds	279.2	7.5	257.5	9.5
Fixed Deposits	217.9	5.9	435.7	16.0
Local & Regional Equities	364.5	9.8	214.6	7.9
Loans	196.0	5.3	71.9	2.6
Real Estate	248.8	6.7	76.3	2.8
Foreign Investments	158.8	4.3	107.2	3.9
Total	**3,701.4**	**100.0**	**2,716.8**	**100.0**

Notes: Totals may be off due to rounding

Notable changes in asset mix between 2008 and 2011 are:

(i) Slight increase in the percentage of the Fund held in Barbados Government securities.
(ii) Significant reduction in the percentage held in fixed deposits from 16% to 6%.
(iii) Significant increase in loans and real estate holdings.
(iv) Nearly 50% increase in the value of foreign investments even though there were only limited new funds placed overseas during the review period (none since 2009) due to Central Bank restrictions.

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

- 68.3% of assets are held in public sector (Government and Quasi-Government) securities,
- 5.9% of assets are held in short-term deposits, and
- 91% of assets are held locally.

Overall, NIF assets remain heavily invested within Barbados with significant concentration in public sector securities.

1.6 Subsequent Events

This report was prepared in late 2013, almost 2 years after the end of the review period. Following is a brief summary of economic and NIS experience in 2012 and first half of 2013 that influence the analysis, projections and recommendations of this review.

- The economy remained sluggish with zero growth in 2012 and a contraction of less than 1% forecasted for 2013. Gross public sector debt was estimated at 102% of GDP in mid-2013.

- Employment levels continued to decline in 2012 and first quarter of 2013. While inflation remained high through mid-2012, the increase in Retail Price Index between July 2012 and June 2013 was 2.1%.

- In 2012, and during the first 6 months of 2013, contribution income continued to decline over the previous year while benefit expenditure continued to increase.

- During the first six months of 2013, NIF benefit expenditure was $262.7 million compared with contribution income of $264.1 million.

- The proportion of the NIF invested in Government of Barbados and other public sector securities increased from 68.3% in December 2011 to 73.8% in October 2013.

- The Investment Policy Statement which guides National Insurance Fund investments was revised in early 2013. The following table shows the asset mix in October 2013 of the National Insurance Fund compared with the acceptable ranges found in the Investment Policy Guidelines.

Table 1.4. October 2013 Asset Mix Compared With Investment Policy Guidelines

Investment Classification	Actual	Target	Variance
Money Market*	6.0%	6%	In Line
Fixed Income			
Debentures – Gov't of Barbados	43.8%	25%	Well In Excess
Treasury Notes	18.3%	19%	In Line
Statutory Corporations Debt	7.4%	10%	Under
Regional Government Debt	1.4%	2%	In Line
Loan	3.3%	3%	In Line
Corporate Bonds	1.1%	3%	Under
Equities			
Local & Regional	7.2%	8%	In Line
International	4.3%	12%	Under
Real Estate	7.5%	12%	Under

* Incudes Treasury Bills

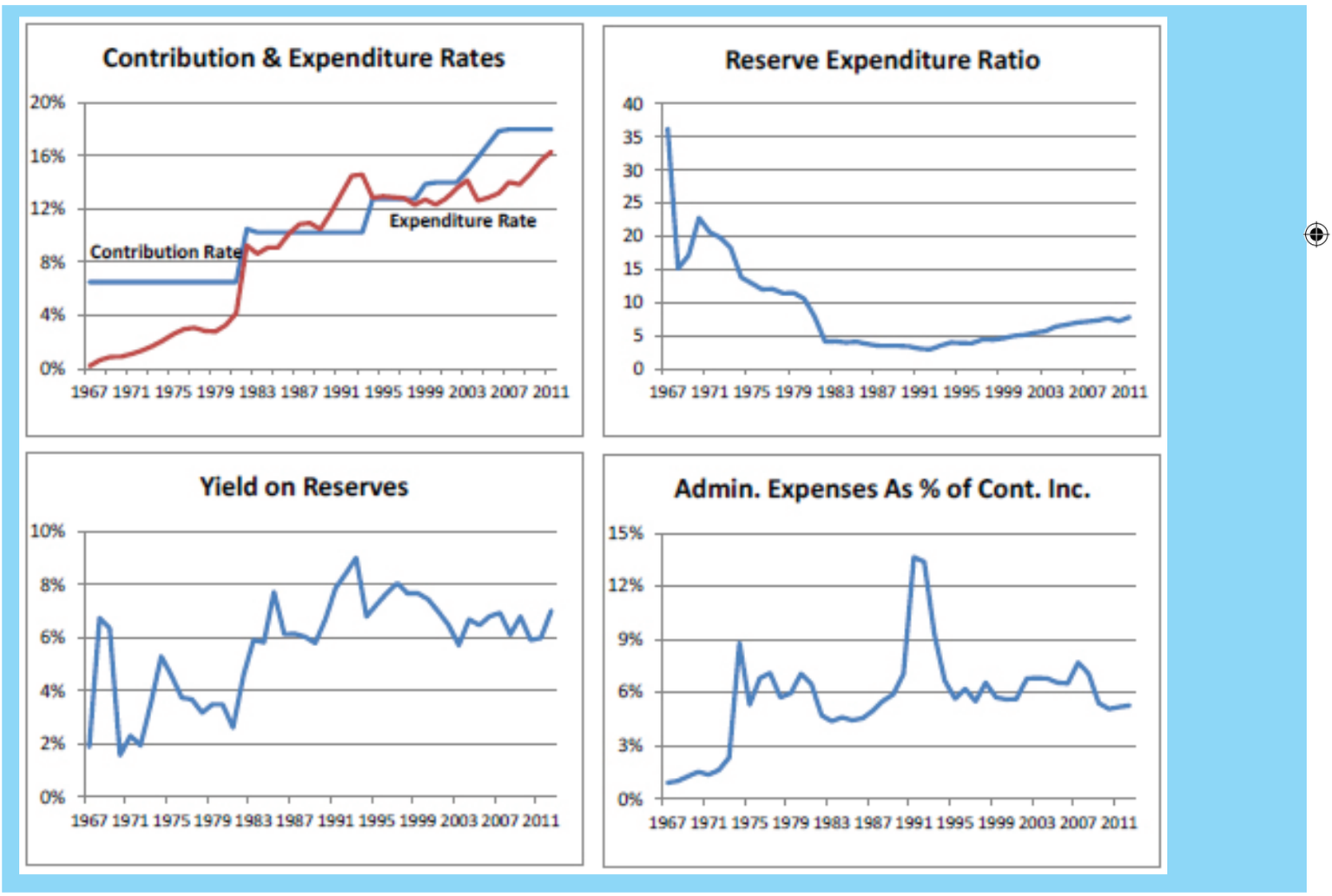
As shown above the portion held in Debentures is well above the target. Recent Government pronouncements suggest that funds from the NIF may be used to part-finance major capital hotel refurbishment and social infrastructure projects.

Chapter 2 - Assessment Of Performance & System Design

National 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. On the other hand, inadequate pensions result in pressures to increase benefits or add new ones. This Chapter contains a review of past trends for key financial indicators and current design parameters, and examines how well key policy objectives are being met.

2.1 Historical Performance, 1967 – 2011

Experience for key financial factors from 1967 to 2011 is presented in the following charts:



As a social security system matures total expenditure as a percentage of insurable wages gradually increases while the size of the reserve relative to annual expenditure decreases if the contribution

rate is not increased. For the NIS, expenditure has gradually increased as depicted by the red line (top left chart), while the relative size of reserves declined for the first 25 years but has been increasing since. This increase has been due to the many contribution rate adjustments that have been made, the most recent ones occurring between 2003 and 2006.

One key objective of the reforms made in 2002 was to have a reserve of at least 5 times expenditure in 2030. At the end of 2011, this ratio was 7.8. The combination of a reducing number of contributors and contribution income but an increasing number of pensioners and benefit expenditure has resulted in a sharp increase in the expenditure rate (red line in top left chart) between 2008 and 2011.

As the size of the Fund grows, the rate of return becomes more critical to achieving long-term sustainability. As shown above, rates have generally remained slightly above 6% since 2003. The Fund continues to experience relatively low administrative costs. Higher costs between 2002 and 2008 relate to the investment made in new information technology systems.

Following are values for several key indicators as of the dates of the 12th, 13th and 14th Actuarial Reviews along with a brief analysis of the changes that have occurred.

Table 2.1. National Insurance Performance Indicators

	2005	2008	2011	Comments
1. Avg. Contribution Rate	16.9%	18.0%	18.0%	No change since 2006
2. Expenditure Rate	12.8%	13.9%	16.3%	Significant increase between 2008 and 2011
3. Benefits as % of GDP	4.9%	5.0%	6.4%	Benefits grew considerably faster than GDP in most recent 3 years
4. Reserve-Expenditure Ratio	6.6	7.3	7.8	Gradual increase as expected after rate increases in 2003 to 2006
5. 3-year average nominal yield on reserves	6.3%	6.6%	6.2%	Little change in past nine years
6. 3-year average real yield on reserves (net of inflation)	3.2%	0.1%	-0.1%	No net real returns on NI Fund in past 6 years
7. Administrative Expenses (3-yr average) as: • % of Contributions • % of Insurable Wages	 6.7% 1.06%	 7.1% 1.27%	 5.2% 0.94%	Once depreciation of IT system completed, administrative costs have returned to very good levels
8. # of Contributors Per Pension	3.4	3.5	3.3	Very little change over 6 years
9. Avg. Pension as % of Avg. Insurable Wage	35%	39%	46%	Significant increase over 6 years

These indicators are generally consistent with expectations and economic conditions between 2005 and 2011.

2.2 Meeting Policy Objectives

The National Insurance system is mandatory for all employed and self-employed persons and is expected to be perpetual. It has a defined benefit structure where the rules governing eligibility and the amounts payable are defined. Together, 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.

The OECD in their report "OECD Pensions Outlook 2012" classified a national pension system's primary objectives into several categories. The ones being most relevant for the Barbados NIS are:

- *Coverage*, which looks at how well workers of all sectors are covered for income security in old age;
- *Adequacy,* which relates to the ability of pensions to provide a decent standard of living;
- *Financial sustainability,* which ultimately relates to the affordability of the system to future contributors;
- *Work incentives*, which relate to pension systems having rules that do not encourage people to cease working but instead encourage them to remain employed longer; and
- *Administrative efficiency,* which relate to keeping operating and management costs low while delivering quality service.

To determine how well these objectives are now 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 and Employment Injury benefits, this analysis focuses primarily on pensions which account for 90% of NIF benefit expenditure.

2.2.1 Coverage

With NIS 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 an NIS pension. The following three estimates for 2011 provide a fairly good analysis of current coverage levels:

a) % of employed persons contributing to the NIS 90%

b) % of the elderly resident population who receive an NIS pension 70%

c) % of workers that have their wages fully covered by the NIS 78%

The first two indicators above suggest that most workers participate in the NIS and that among the elderly, almost three-quarters receive some form of monthly income from the NIS. Both of these indicators are very good. The majority of the 10% of workers who do not contribute are self-employed.

Although adjustments to the earnings limit occur each year, having 22% of the workforce earning more than the earnings limit, suggests that the ceiling or earnings limit may be slightly low.

In total, the NIS provides a reasonably good level of coverage to the working and elderly population.

2.2.2 Adequacy

Benefit adequacy can be broken down into two components:

- Current adequacy: Are pensions adequate today?
- Future adequacy: Given current provisions, will the pension be adequate in the future?

Current Adequacy

The minimum contributory pension in 2013 is $175 per week or $758 per month, approximately 30% of the average insurable wage. This is an acceptable minimum pension replacement rate. Annual adjustments to the minimum rate and all pensions in payment, provide further support to maintaining benefit adequacy.

For pensioners receiving more than the minimum, their pension replacement rates are initially between 30% and 60% of their final average insurable earnings. Given that they now receive regular pension adjustments, their benefits can also generally be considered adequate.

While new awards are no longer financed by the NIF, the existence of a government-financed non-contributory old age pension for those who do not qualify for the NIS contributory Old Age pension or other public or private pensions, provides further income protection for lower income seniors.

Future Adequacy

A worker who has steady earnings below the earnings limit and contributes to the NIS for a full career sustaining himself/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 quite high and thus meets reasonable tests of benefit adequacy. 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 or 40 years.

Annual adjustments to the earnings limit and pensions will ensure benefit adequacy both at the time of award and throughout the pension payout period as the pension maintains its initial purchasing power. The uncertainty of future benefit adequacy, therefore, relates only to those who have employment earnings well in excess of the earnings limit and those who fail to contribute for at least 10 years.

When compared with targeted replacement rates for mandatory social security pensions in OECD countries, the Barbados NIS provides relatively high replacement rates. The NIS pension is not intended to provide all of the income required to support oneself in old age. Based on the above, current NIS 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, employment injury and unemployment benefit provide full income protection for all contingencies that could lead to involuntary loss of employment income.

Financial Sustainability

Assessing the sustainability of a national pension system is complicated. Given the perpetual nature of these systems, 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 NIF is partially funded and the current contribution rate and accumulated reserves are expected to be adequate to meet all obligations for another 30 to 40 years. However, with contributions alone 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.

There are several risks associated with holding reserves of over $4 billion that can impact long-term financial sustainability. The main risks for the NIF at this time are reductions in investment returns, imprudent use of Fund assets and the inability of Government to return cash to the NIS when debentures mature and the NIS needs cash to meet its obligations. Finding ways to effectively mitigate these risks will be critical given the state of both the economy and Government finances.

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. The current average rate of 18% is already high by regional standards, but as previously exhibited by stakeholders, significant reforms can be made after wide and open consultation. The key challenge for the NIB regarding financial sustainability is determining when next to consider increasing the contribution rate or making benefit reforms.

Work Incentives

Implicit incentives and disincentives to either remain working or claim Retirement benefit are found in both the eligibility conditions for, and the manner in which, the Old Age Contributory benefit is calculated. The specific factors that influence employment decisions are:

- Reduced benefits if awarded between 60 and normal pension age (currently 66);
- No pension awarded prior to normal pension age if still employed; and
- Increased benefits if awarded after pension age.

These conditions are considered adequate and appropriate.

Administrative Efficiency

While the NIS has a very low cost of administration relative to its Caribbean counterparts, the level of service and availability of reliable information remain challenges. Examples of these are the time it takes to process claims and the lengthy delays in having financial audits conducted and annual reports prepared.

Unlike most other social security institutions in the region that are operated as quasi-public sector entities where the Board oversees the entire administration, the National Insurance Office is staffed with public servants and the Board manages the Fund. While this approach has its advantages, experience suggests that NIS operations could be more effective if greater autonomy was given to the Board on human resource matters and the conducting of financial audits.

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

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 National Insurance Fund finances. Therefore, to best assess the Fund's long-term costs and sustainability, projections of Barbados' total population and the economy are required. For this review 60-year projections have been performed.

In developing all of 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. As a result, the set of demographic and financial projection results based on this assumption set is referred to throughout this report as "*Best Estimate*."

Given the significant uncertainty inherent in forecasting such a long period, projections have also been performed using two additional sets of assumptions. These alternative projection sets, which encompass assumptions that are generally more optimistic and more pessimistic than best-estimate assumptions, are labelled "*Optimistic*" and "*Pessimistic*", given the implications for future NIF finances. Results of these projections are presented in Chapter 4.

3.1 Population Projections

3.1.1 Assumptions

Projections of Barbados' population begin with the results of the 2010 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 Barbados, and is the most volatile of the three factors. The 2010 population census placed Barbados' population at 277,723.

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. Barbados TFR was estimated at between 1.65 and 1.7 over the period 2006 to 2012. For these projections it is assumed that TFR's in Barbados will remain below replacement level at 1.65.

Using mortality rates from Barbados Abridged Life Tables, 1999-2001, current population estimates and the number of deaths in the past few years suggest life expectancy at birth in 2011 of around 73 for males and 79 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. Using the 2000 and 2010 census counts, and reported births and deaths between censuses, implied net out-migration between 2000 and 2010 is estimated at around 400 per annum.

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

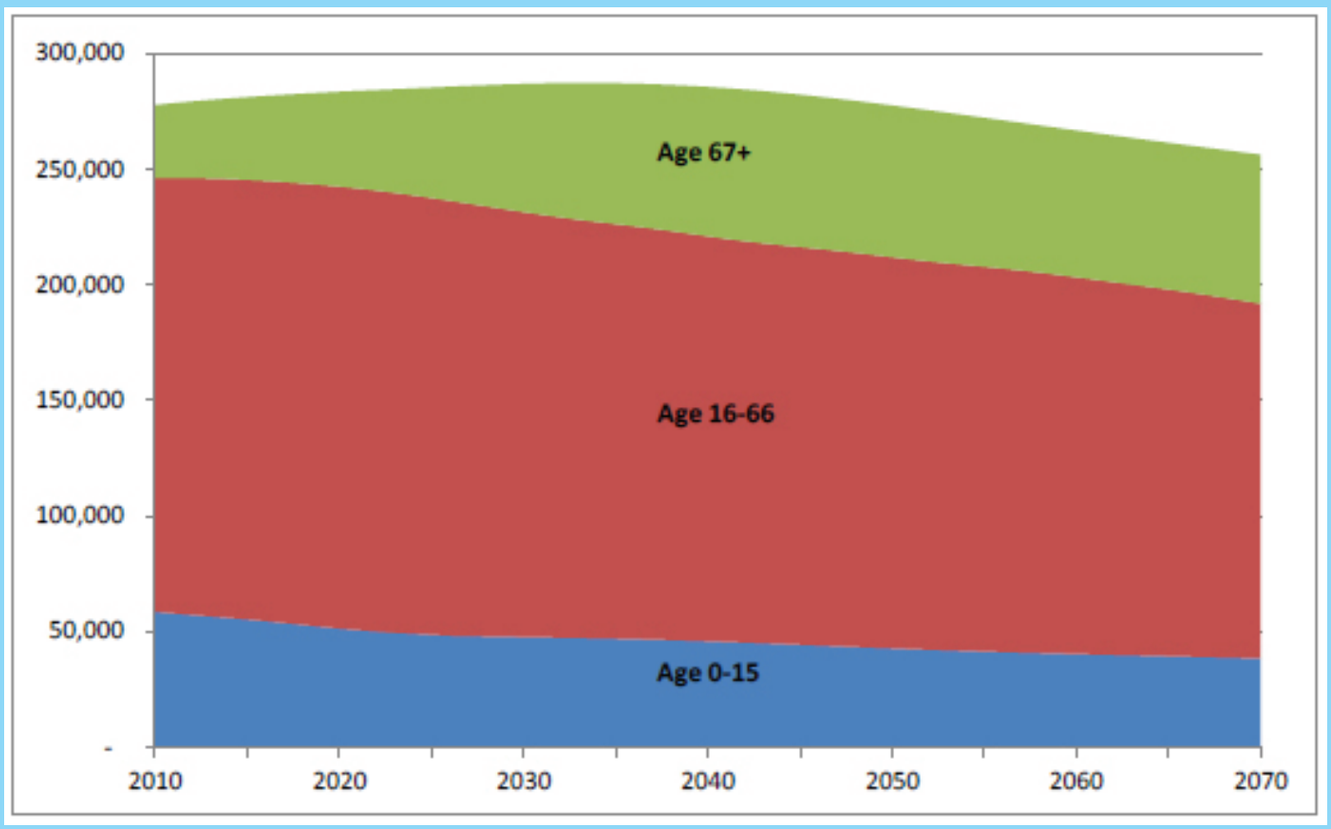
		14th Actuarial Review	13th Actuarial Review
Total Fertility Rate		1.65	Increasing from 1.8 to 1.9
Mortality Improvements^		Slow	Slow
Net In-Migration Per Annum		-300 p.a. in 2010 increasing to 0 p.a. in 2020 increasing to 300 p.a. in 2030, constant thereafter	100 p.a. between 2000 & 2010 increasing to 200 p.a. in 2020, increasing further to 300 p.a. in 2035, constant thereafter.
Real GDP Growth Rates	Short-term	-0.6% in 2013 to 2.0% in 2015	2.5% declining to 1.5%
	Med.-term	1.5%	2.50%
	Long-term	1.0%	1.25%
Real Increase in Wages		0.75%	1.0%
Long-term Inflation		2.5%	2.5%

^ UN mortality improvement rates

3.1.2 Projection Results

From the 2010 Census population of 277,821 and with the above assumptions, Barbados' population is projected to increase only slightly over the next 20 years and then gradually decrease.

Figure 3.1. Projected Barbados Population (Best-Estimate scenario)



It should be noted that the projections presented in this report have been prepared for the sole purpose of determining the implications for NIF finances under three different sets of future economic growth and development scenarios.

For the NIF, 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 that will be paid by those in the working-age groups. 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. These projections show a smaller projected population than presented in the 13th Actuarial Review.

3.2 National Insurance Fund Projections

Best Estimate National Insurance Fund demographic and financial projections have been modelled using the best-estimate population results, best estimate NI-specific assumptions and the contribution and benefit provisions that were in place on January 1, 2012, with provisions made for previous reforms that are being phased in gradually.

3.2.1 Assumptions

Key National Insurance assumptions are shown below.

Table 3.2. National Insurance Best Estimate Assumptions

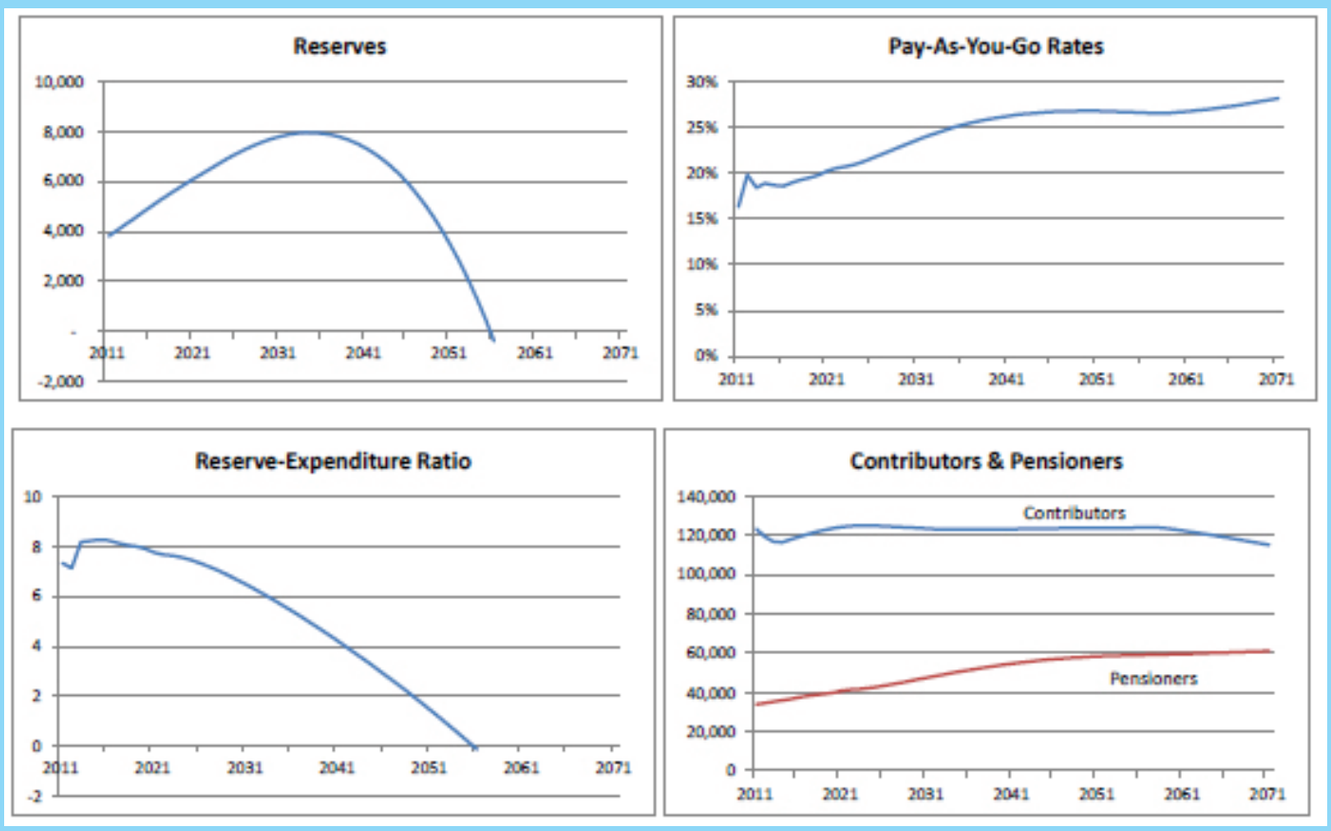
	14th Review	13th Review
Avg. Contribution Rate	18% in all years	18% in all years
Insurable Wage Ceiling increases	Annually by the change in the wage index	Annually by the change in the wage index
Short-term Benefits	1.65% of Insurable Earnings	Increases from 1.38% to 1.5% of Insurable Earnings over 60 years
Pension Increases	Annually by lower of 3-year average change in prices and wages	Annually by lower of 3-year average change in prices and wages
Long-term Yield on Reserves	5.0% (2.5% above inflation)	5.5% (3.0% above inflation)
Other Income	0.9% of Contribution Income	0.9% of Contribution Income
Admin. Expenses as a % of Insurable Wages	1.0% of Insurable Earnings	Decrease from 1.3% to 0.8% of Insurable Earnings over 20 years

With the automatic annual earnings limit and pension adjustments it is being assumed that the prevailing level of coverage and income security made possible by the earnings ceiling and the minimum pension will be generally maintained throughout the projection period.

3.2.2 Projection Results

The charts in Figure 3.2 highlight key projection results of the Best Estimate scenario assuming that the contribution rate is not increased and that there are no changes to benefit rules other than those already legislated.

Figure 3.2. Projection Results – Best Estimate Scenario



The key results of these projections are summarised as follows:

1. Expenditure will exceed contribution income in each year.
2. The first cash flow deficit (total expenditure greater than total income) will occur in 2035.
3. Reserves are projected to be exhausted in 2056.
4. In 2056 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 28.2% in 2071.
6. The general average premium, or the average level contribution rate required over the next 60 years to fully cover total expenditure during that period, is 23.5%
7. The number of contributors for each pension in payment is expected to fall from 3.6 in 2011 to 1.9 in 2071.

One key funding objective of the pension reforms made in 2002 was a target reserve-expenditure ratio of 5.0 in 2030. For this Best Estimate scenario, this target is met as the projected reserve-expenditure ratio in 2030 is 6.7.

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

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

	Cash Inflows				Cash Outflows				Reserves	
Year	Contribution Income	Investment Income	Other Income	Total	Benefits	Admin & Other Expenses	Total	Surplus/ (Deficit)	End of Year	# of Times current year's Expenditure
2009	523.3	193.6	6.1	**723.0**	398.9	28.2	**427.1**	**295.9**	**3,267**	7.6
2010	564.7	179.5	6.1	**750.2**	461.8	28.6	**490.4**	**259.8**	**3,525**	7.2
2011	541.6	239.1	6.1	**786.8**	463.1	28.0	**491.1**	**295.7**	**3,819**	7.8
2012	529.3	250.1	6.1	**785.5**	540.3	27.8	**568.1**	**217.3**	**4,036**	7.1
2013	512.9	251.1	4.6	**768.6**	496.8	28.5	**525.4**	**243.2**	**4,296**	8.2
2014	52.7	257.2	4.7	**786.5**	521.9	29.2	**551.1**	**235.5**	**4,531**	8.2
2015	556.8	260.1	5.0	**822.0**	548.1	30.0	**578.0**	**243.9**	**4,775**	8.3
2016	590.2	262.3	5.3	**857.8**	578.2	31.3	**609.4**	**48.4**	**5,024**	8.2
2017	612.5	263.1	5.5	**881.1**	613.9	32.5	**646.3**	**234.7**	**5,258**	8.1
2021	701.6	294.2	6.3	**1,002.0**	753.8	37.3	**791.2**	**210.9**	**6,134**	7.8
2031	918.8	378.8	8.3	**1,305.9**	1,160.1	49.3	**1,209.4**	**96.5**	**7,812**	6.5
2041	1,206.7	363.2	10.9	**1,580.7**	1,694.4	65.3	**1,759.7**	**(179.0)**	**7,350**	4.2
2051	1,615.8	180.9	14.5	**1,811.3**	2,318.9	88.2	**2,407.1**	**(595.9)**	**3,404**	1.4
2061	2,168.3	(259.3)	19.5	**1,928.5**	3,105.7	119.4	**3,225.1**	**(1,296.6)**	**(5,973)**	(1.9)
2071	2,819.2	(1,214.5)	25.4	**1,630.0**	4,258.3	156.6	**4,414.9**	**(2,784.9)**	**(26,288)**	(6.0)

Investment income includes change in Revaluation Reserve & figures for 2012 are actual.

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

	Pensions, Grants & Benefits						Benefits as a % of	
Year	Old Age Cont.	Invalidity	Survivors	Non-Cont. Old Age	Short-Term	Emp. Injury	Insurable Wages	GDP
2011	319	50	20	19	39	6	15.4%	6.4%
2012	383	61	23	17	49	7	18.4%	6.4%
2013	357	49	23	14	48	6	17.1%	5.8%
2014	377	52	24	13	49	7	17.5%	5.9%
2015	398	55	25	11	52	7	17.5%	6.0%
2016	423	58	26	10	54	8	17.6%	6.1%
2017	453	61	27	9	56	8	18.0%	6.2%
2021	571	73	31	5	64	10	19.3%	6.7%
2031	925	96	42	0	84	13	22.7%	7.8%
2041	1,390	121	57	0	111	16	25.3%	8.7%
2051	1,916	161	72	-	148	21	25.8%	9.0%
2061	2,565	222	91	-	199	29	25.8%	9.2%
2071	3,564	281	119	-	258	37	27.2%	9.6%

Note: Figures for Old Age Non-contributory pensions are amounts for which NIS is financially obligated.

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

Year	# of Contributors	Old Age Cont.	Invalidity	Survivors	Old Age Non-Cont.	Death & Disablement	Total # of Pensioners	Ratio of Contributors to Pensioners
2011	121,088	23,169	3,656	2,732	4,108	339	**34,004**	3.6
2012	119,380	23,969	3,415	2,880	3,752	331	**34,346**	3.5
2013	116,995	24,820	3,567	3,014	3,408	346	**35,154**	3.3
2014	116,594	25,502	3,721	3,111	3,078	360	**35,772**	3.3
2015	118,094	26,236	3,880	3,200	2,764	374	**36,455**	3.2
2016	119,482	27,152	4,030	3,271	2,466	388	**37,308**	3.2
2017	120,788	28,023	4,161	3,325	2,186	399	**38,094**	3.2
2021	124,467	31,160	4,570	3,333	1,241	432	**40,737**	3.1
2031	123,649	38,651	4,864	3,487	92	459	**47,553**	2.6
2041	123,420	45,641	4,859	3,811	0	465	**54,777**	2.3
2051	123,880	49,152	4,965	3,858	-	474	**58,450**	2.1
2061	122,530	50,335	5,086	3,783	-	483	**59,686**	2.1
2071	115,302	52,230	4,740	3,690	-	453	**61,113**	1.9

Note: The number of Old Age Non-contributory pensioners shown are those for whom NIS is financially obligated.

For National Insurance 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 covered wages. For private pension plans, however, where full funding is the financing objective, there are other measures of the system's cost and, where applicable, financing shortfall, that may be useful for National Insurance policy makers to be aware of.

3.2.3 General Average Premium

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 National Insurance benefits package. For the Best Estimate projections, the general average premium is 23.5%.

3.2.4 Actuarial Balance

Another measure of the financial sustainability of a National Insurance system is called "actuarial balance." For a given period, the actuarial balance can be defined as the difference between:

a) the sum of the beginning reserves and the present value of future contributions (money available to meet expenditure), and
b) 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 National Insurance Fund, the deficiency expressed in dollars and as a percentage of GDP is shown in Table 3.6.

Table 3.6.

Actuarial Balance 2012 – 2071 ($'s are in millions)

	2011 Year-end Reserves	3,819
Plus	**PV of Future Contributions**	17,457
Minus	**PV of Future Expenditure**	22,793
Equal	**PV of Surplus/(Shortfall)**	(1,517)
	Actuarial Balance (% of Insurable Earnings)	(1.6%)
	Actuarial Balance (% of GDP)	17%

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 1.6% indicates that the average contribution rate would have to be increased to 19.6% for the entire period in order for reserves to last up to 2071.

3.3 Comparison with Results of The 13th Actuarial Review

The projection results presented earlier in this chapter differ from those of the 13th Actuarial Review as shown in the following table:

Table 3.7. Summary Results – 13th & 14th Actuarial Reviews

	14th Actuarial Review	*13th Actuarial Review*
Expenditure First Exceeds Total Income	2035	2048
Reserves Depleted	2056	2068
General Average Premium	23.5%	20.9%
Pay-as-you-go rate in 2068	27.7%	26.1%

The results of this 14th Review show a less favourable outlook than presented in the 13th Review. The main reasons for this are:

- Significant reduction since 2008 in size of the workforce and the number of NIS contributors; (Figure 1.1)
- Tempered economic outlook with smaller populations and lower economic growth;
- ½% reduction in long-term yield on reserves and discounting rate has significant effect on present values and general average premium calculations.

3.4 Sensitivity Analysis

Given the extensive set of assumptions required for projecting NIF 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 National Insurance assumptions are presented in the following chapter. However, certain National Insurance factors such as compliance, yield on reserves and level of administrative costs will also impact the Fund's outlook. The change in long-term costs for differences in these factors is shown in the following table.

Table 3.8. Sensitivity Tests – National Insurance Factors

Assumption	Differs From Best Estimate	Pay-as-you-Go Rate in 2041	General Average Premium	Reserves Depleted
Best Estimate		26.3%	23.5%	2056
Contribution Collections	+3.0% -3.0%	24.8% 27.8%	22.9% 24.1%	2066 2049
Long-term Yield on Reserves (5.0%)	+1.0% -1.0%	26.3% 26.3%	23.0% 24.0%	2069 2049

As shown above, the long-term costs of NIF benefits could be reduced/increased by a few basis points if collections are greater/lower than assumed and yields on reserves are greater/lower than assumed.

With over 70% of Fund investments held in public sector instruments, one key concern for long-term sustainability is a restructuring of Government debt where the face amount is reduced and/or yields are drastically reduced. Both scenarios have occurred in the Caribbean in recent years as governments sought ways to improve their fiscal positions. A scenario where 50% of the portfolio loses 20% of its value and future returns were 4% instead of 5% suggests that reserves would be depleted in 2049 instead of 2056.

Chapter 4 - Alternative Scenarios

Best Estimate projections up to 2071 presented in the previous chapter provide estimates of future National Insurance 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 NIB-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 one with a larger economy with higher wages, lower pensions, better contributions compliance and higher investment returns while the Pessimistic scenario represents a smaller population with lower wages and larger pensions, lower contributions 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

		Optimistic	***Best Estimate***	***Pessimistic***
Ultimate Total Fertility Rate		1.70	1.65	1.60
Mortality Improvements^		Very Slow	Slow	Medium
Net (In) Migration Per Annum		25% of Best Estimate for out migration, 175% for in migration	-300 p.a. in 2010 increasing to 0 in 2020, increasing to 300 p.a. in 2030, constant thereafter	175% of Best Estimate for out migration, 25% for in migration
	Short-term		-0.6% in 2013 to 2.0% in 2015	
Ultimate Real	Med.-term	1.5%	2.25%	2.00%
GDP Growth	Long-term	1.0%	1.25%	1.00%
Real Increase In Wages (p.a.)		1.0%	0.75%	0.5%
Inflation (p.a.)		2.25%	2.5%	2.75%
Collection Of Contributions		+2%	-	-2%
Long-term Yield on Reserves		5.5%	5.0%	4.5%

^ UN mortality improvement rates

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

Figure 4.1. Projection Results – All Scenarios

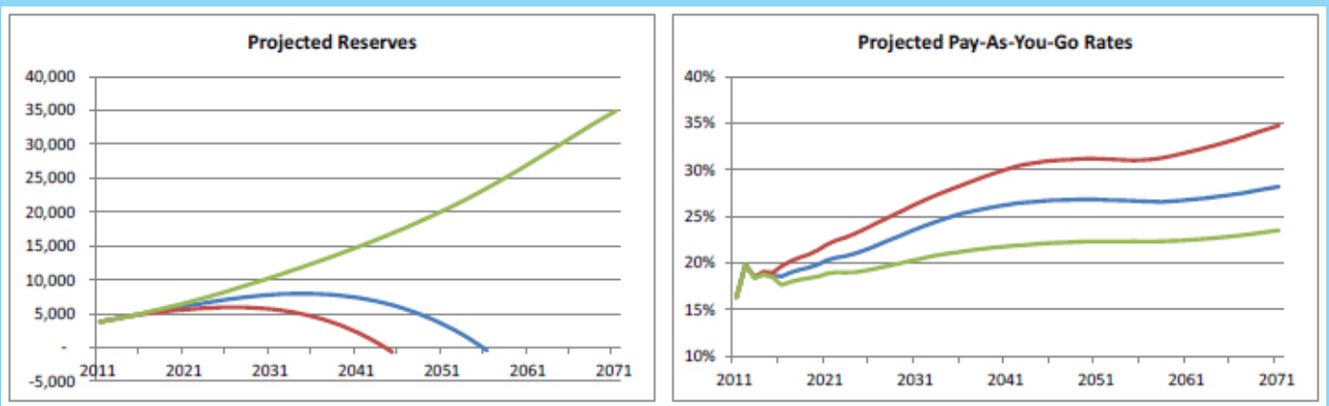


Table 4.2. Summary Results – All Scenarios

	Optimistic	*Best Estimate*	*Pessimistic*
Expenditure First Exceeds Total Income	-	2035	2028
Reserves Depleted	-	2056	2045
Reserve Expenditure Ratio in 2030	8.6	6.7	5.1
General Average Premium	20.9%	23.5%	26.0%
Pay-as-you-go rate in 2041	21.8%	26.3%	30.1%
Pay-as-you-go rate in 2071	23.5%	28.2%	34.7%
# of Contributors per pensioner– 2071	2.0	1.9	1.7
Actuarial Balance (% of Ins. Earnings)	0.9%	(1.6%)	(4.0%)
Actuarial Balance (% of GDP)	10%	(17%)	(43%)

Chapter 5 - Balancing Adequacy & Sustainability

By design, National Insurance Fund pension obligations are partially funded; that is, assets on hand are not sufficient to meet total liabilities if all payments were due on a particular date. This funding mechanism is considered suitable for national pension systems given their expected perpetual life. With funding levels (measured by the reserve-expenditure ratio) expected to gradually deteriorate and pay-as-you-go rates projected to increase to around 28%, changes to the contribution rate and/or further benefit reforms may be required.

The ability of any social security system to remain meaningful to insured persons, yet affordable to future generations, is dependent on the following four ingredients:

(i) A growing economy,
(ii) A well designed system,
(iii) Effective and efficient administration, and
(iv) Good governance.

While National Insurance officials have little influence over the economy they can directly impact the other three ingredients listed above. Extensive reforms made in 2002 which focussed on improving system design and enhancing financial sustainability included:

- Increasing the normal pension age,
- Reducing the initial Contributory Old-Age pension amount,
- Introducing reduced early Old-Age pensions if retired, and
- Introducing annual indexation of the earnings limit and pensions, and
- Increasing the contribution rate

Greater focus should now be placed on improving operations and administration and implementing good governance practices at all levels.

Under the headings of the policy objectives previously discussed in Chapter 2 the following table and sections suggest further reforms, or new initiatives, that if implemented soon, should serve to further enhance sustainability while maintaining benefit adequacy.

Table 5.1 Policy Objective Challenges And Options For Reform

	Challenges With Current Situation	Reform Options
Coverage	Many self-employeds not contributing	More flexible options for self-employed contributions
Benefit Adequacy	No Old Age Contributory pension prior to normal pension age if calculated benefit less than minimum pension	Allow reduced early age pensions
Financial Sustainability	Contribution delinquencies have grown in recent years Investments heavily concentrated within Barbados and in Government debt	Enhance links with government departments and agencies Better enforcement and/or or increased penalties for non-compliance Diversify investments outside of public sector and outside of Barbados
Administrative Efficiency	Lengthy service times Incomplete data	Make greater use of available technology or upgrade where necessary Ensure adequate staff in key positions

5.1. Coverage

5.1.1 Self-employed Persons

Most self-employed persons and informal sector workers do not regularly make NIS contributions. (3,500 out of the 20,400 in 2011 as estimated by the Barbados Statistical Service) While many reasons have been presented as to why they do not participate, a system whereby someone can make flexible, lump sum payments, or in other words, simply "put money on their account" as their needs allow, should be considered for such workers. Currently, the contribution payable is based on the amount earned and the number of weeks worked. An alternative approach whereby the amount paid during a given year is converted to average wages and number of contributions can be developed. Such an approach can also serve to prevent self-employed persons "back-paying" several years of contributions simply to qualify for an Old Age pension. See Appendix F for details of the proposed alternative approach.

Enhanced and sustained public education activities highlighting the benefits of self-employed persons and informal sector workers contributing to the NIS should be continued.

Following are details of the recommended approach to managing registration, contributions and benefits for self-employed persons.

1. Registration & Education	• Each self-employed person has a unique NIS # • Upon registration (or re-registration) he/she shall indicate what income band he/she is usually in. There shall be 4 income bands as shown below. o A: 95% or more of the earnings limit (100%) o B: 75% to 95% of the earnings limit (80%) o C: 50% to 75% of the earnings limit (60%) o D: less than 50% of the earnings limit (40%) • 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 earnings limit 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.
2. Contribution payments	• No forms required • No need to pay for any particular month or indicate how many weeks were worked • Pay in cash or send a cheque or any other permitted form of payment indicating that it is to be applied to his/her "account" or NIS #. (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.

3. Year-end internal calculations	• Using the amount contributed during the previous year and the income band selected, obtain the number of weeks paid for the year as: o Total contributions made / 0.155 / 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	• 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	• Same approach as currently in place: o 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 $1,000 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	$1,000 per week	$600 per week
Max. Contributions Expected	$1,000 x 52 x 15.5% = $8,060	$600 x 52 x 15.5% = $4,836
Actual Contributions Paid in the Year	$7,000	$3,000
# Contribution Weeks Made	$7,000 / 0.155 / $1,000 = 45 wks	$3,000 / 0.155 / $600 = 32 wks

For the year illustrated above, the database shall reflect that Self-employed # 1 made 45 weekly contributions for the year at an average insurable wage of $1,000 per week.

5.2. Benefit Adequacy

5.2.1 Old-Age Benefit Awards Prior to Normal Pension Age

Section 32(1B) of the Benefits Regulations provides that an applicant for Old Age contributory pension who is less than normal pension age shall not be awarded the pension if the calculated reduced pension amount is less than the minimum pension. This provision was added when the ability to receive reduced pensions from age 60 was introduced. This restriction has disadvantaged many claimants.

The Board may wish to first of all of determine how many applications are affected by this restriction and if significant, whether an amendment should be made. Two possible alternatives and their implications are discussed below.

a) Award early pensions at a rate lower than the current minimum rate	• Set minimum pension rates for each age under normal pension age. These minimums could be either the full 0.5% per month or slightly less
b) Award the minimum pension	• This would lead to increased cost over current rules as the full effect of the reduction for early payment would not be applied to lower income pensioners.

5.2.2 Payment of Old Age or Invalidity Pension With Survivors Pension

When the National Insurance Scheme was established the concept of survivors' benefit was predominantly geared towards the non-working widow of a contributor. Today, women make up more than 50% of NIS contributors and thus are often entitled to their own Old Age pension.

When a spouse dies, and the survivor is in receipt of, or later qualifies for, an Old Age pension, he/she will only receive the larger of the Old Age pension or the Survivors' pension. As a consequence of present rules, it is possible for household income to fall by more than 50% should one pensioner die. For example, if the husband's weekly pension is $500 and the wife's $300, total household income would fall from $800 to $300 after the husband's death. ($300 is the greater of 50% of $500 and $300) Therefore, there would be a strong argument that in such a case more than just the greater benefit be paid as household expenses do not fall by as much as 50% following the death of one person.

Also, if both spouses are receiving Old Age pensions, the pension to the surviving spouse upon death of one spouse may be different depending on who dies first. Using the above example, if the wife had died first, the husband's pension would remain at $500. ($500 is the greater of $500 and 50% of $300) Therefore, if both spouses shared household income equally regardless of whose pension is larger – the current survivors' pension discriminates against the spouse with the lower pension.

There are also instances where current rules may result in the surviving spouse of a household in which only the husband worked, receiving a larger pension than the surviving spouse of a household where both spouses worked and both households had the same income.

To eliminate such anomalies and possible financial hardship that the present survivors' pension provisions may create, the Board may consider the payment of both pensions. There are many reasonable options under which the payments of both pensions can be made. Following are two examples:

Option 1:

Where both spouses are pensioners, the survivor would receive the higher of two pensions, but not less than 60% of combined pensions.

Where a Survivor pensioner later qualifies for an Old Age pension, pay 100% of the larger pension plus 50% of the smaller pension.

Option 2:

In all cases, pay 100% of the Old Age pension (their own pension) plus 50% of what the Survivors pension would otherwise have been. This translates to approximately 100% of one's own pension plus 25% of the deceased spouse's pension.

If adopted, persons who have already claimed Survivors' pensions and who are now receiving only the greater of two benefits would have their pensions reworked under the new laws and would receive larger pensions going forward only. The rules that apply for Old Age pension should also apply to Invalidity pension.

This change would result in an increase in both current and long-term pension costs. To properly estimate the cost implications of this change a detailed analysis of Survivor pension claims over a 2-year period should be conducted.

5.3. Financial Sustainability

Enhancing financial sustainability can be achieved through avenues that either increase revenue, from contributions and investments, or reduce the growth of expenditure on benefits and administrative costs.

5.3.1 Investments

The recent defaults and restructurings of public debt by several Caribbean governments show that even government bonds are not as safe as they were once thought to be. With international rating agencies voicing concerns about public sector finances and debt levels (102% of GDP in mid-2013), the NIF's primary long-term risk is the inability of Government to repay the face amount of Treasury Notes and Debentures on or before their maturity dates. While investment managers and policy makers may focus primarily on the Fund's overall rate of return, the rate of return in the short-term will be irrelevant if the Fund is not able to realise the full face value of fixed income securities when needed. The NIF should therefore seek to reduce its exposure to Barbados Government and public sector securities to a maximum of 50% over the next 5 years.

In tough economic times when government revenue is down and demands for employment and social programs are high, social security funds are often targeted by governments to meet both discretionary and non-discretionary spending. The Board should treat all loan/investment requests from Government and statutory bodies with the same amount of scrutiny and due diligence that it would non-traditional investments. Where proposals do not meet the Fund's investment criteria or fit within investment guidelines, they should be rejected.

To ensure that the asset mix remains consistent with current and future needs of the Fund it is further recommended that the recently approved Investment Policy Statement be reviewed periodically as prevailing investment and economic conditions change.

5.3.2 Contribution Rate Increases

As shown in Chapter 3, contribution rate increases may be necessary if the NIF is to meet its obligations beyond the next forty years. However, with reserves of $4.1 billion in 2013 and reserves projected to be more than 5 times expenditure in 2030, a rate increase is not required or recommended now.

Until reserves are exhausted, there is no right or wrong time to increase the contribution rate. The following factors should be considered when deciding whether or not to increase the contribution rate:

- Can workers and employers afford a rate increase in the current environment?
- Can current revenues and liquid assets meet expenditure in the short-term?
- Are there suitable investment opportunities for additional surplus cash?
- Is advanced funding (higher contribution rates and a large fund now with lower contribution rates later) superior to higher contribution rates and a very small fund in the future?

This last question has been debated by economists and social security scholars for many years. Both options have risks and both depend ultimately on a strong economy. However, it is agreed amongst most that to the extent that a social security fund is invested in Government debt, that segment is essentially pay-as-you-go given that the primary sources of Government's revenue are similar to those who make NIS contributions.

While the current funding objective sets a target reserve-expenditure ratio for 2030, it does not speak to what should happen if projected reserves fall short of this target. Further, it would be better if the target year were set as a certain number of years from the review date (say 20 or 30 years) instead of a fixed date of 2030. Also, as the Fund matures, pay-as-you-go rates are likely to stabilise and a ratio of less than 5 will be acceptable. A recommended revised financing objective is:

1. *Reserves of 5 times annual expenditure in 2030 years and 3 times annual expenditure 30 years from the review date.*
2. *Should projections in 2 successive actuarial reviews suggest that these targets will not be met a combination of contribution rate adjustments and benefit reforms should be implemented to bring the Fund back into balance.*

Based on the projections presented in Chapters 3 and 4 the goal of having reserves of 5 times annual expenditure in 2030 is met under all scenarios but a ratio of 3 in 2041 is not met in the Pessimistic scenario.

5.3.3 Compliance

With the economic downturn and businesses having difficulties meeting their obligations, instances of employers and self-employed persons paying contributions late, or not at all, have increased. Not only does the late or non-payment of contributions reduce investments earnings, the failure of employers and self-employed persons to make regular contributions will result in hundreds of workers retiring either without a secure source of income in old age or a smaller pension than would otherwise have been possible.

The Board should fully enforce all existing avenues available to it and identify new means of ensuring that all who are required to contribute do so on a timely basis. While special considerations may be given to the repayment of arrears given the current economic climate, there should be zero-tolerance approach to non-compliance for current contributions.

5.4. Administrative Efficiency

Administrative efficiency relates to both how well the National Insurance Office administers the National Insurance program (collects contributions, adjudicates and pays benefits and invests surplus funds) and how much it costs to perform these functions. As shown in Section 2.2, administrative costs remain very low (between 5% and 6% of contribution income) by regional standards but several service and reporting issues prevail.

Given the significant investment made in an IT system several years ago, the National Insurance Office underperforms what would reasonably be expected in delivering timely benefit adjudication. The concerns relate primarily to the time that it takes to award short-term claims and the time it takes to award pensions. Obtaining complete and reliable data form the National Insurance Office is also a concern. This may be both system related and due to the lack of adequate human resources devoted to data gathering and analysis. Because of this, the publishing of annual reports and the provision of data required for this report have been delayed extensively.

The Board is encouraged to:

a) invest in system upgrades and/or enhancements as well as ensure that the Office is adequately staffed at all levels with the skills required to ensure that exceptional customer service is consistently provided, and

b) engage the Minister and other relevant Government officials in discussions aimed at identifying ways of ensuring the National Insurance Office could be more effective in the delivery of its services and fulfilling statutory obligations.

Section II
Unemployment & Severance Funds

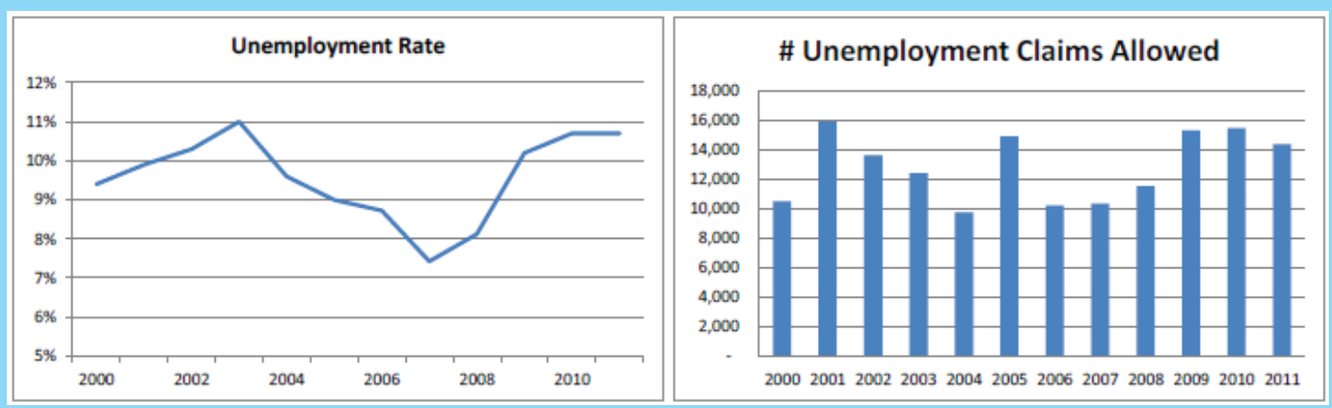
Chapter 6 - Unemployment Fund

Unemployment benefits are administered by the National Insurance Board and are paid from the Unemployment Fund. This Fund finances weekly payments to unemployed persons of 60% of average insurable earnings for up to 26 weeks. The contribution rate for unemployment benefits has been fixed at 1.5% since 1998. Details of unemployment benefit provisions may be found in Appendix A.

6.1 Unemployment Fund Experience

The following charts show the national unemployment rate from 2000 to 2011 and the total number of unemployment claims allowed by the National Insurance Office. Consistent with the global economic crisis and the recession in Barbados, unemployment rates and the number of claims awarded began trending upwards in 2008.

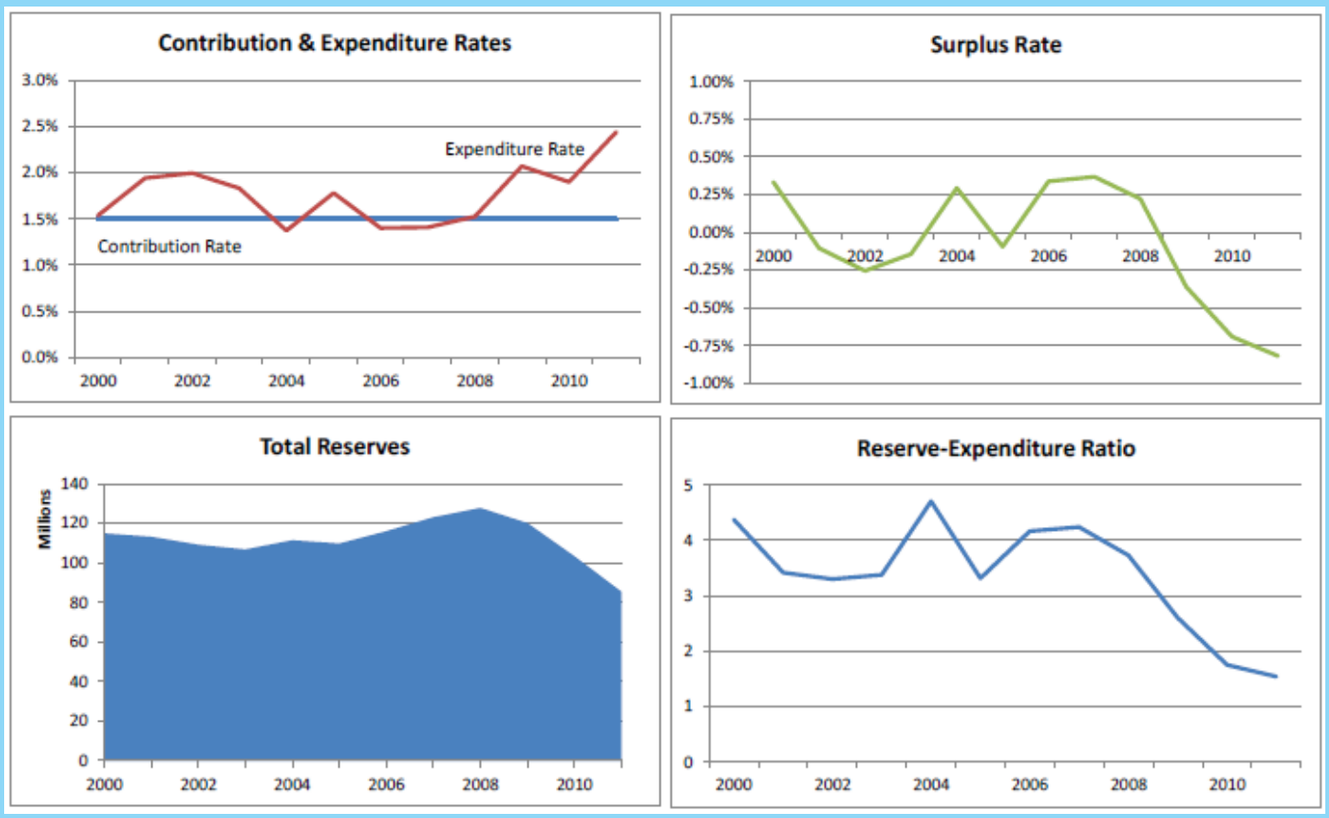
Figure 6.1. Barbados Unemployment Rate & # of Unemployed Persons



In response to rising unemployment and the difficulty unemployed persons had in finding new jobs, the maximum duration for Unemployment benefit was extended from 26 weeks to 40 weeks effective 23rd August 2010. The benefit rate for this extended period was set at 40% instead of the usual 60%. This extension ceased effective June 2012. This amendment had an immediate impact on the amount paid in unemployment claims. The other amendment made during the review period that affected the Unemployment Fund was the transfer of $10 million to a newly created "Retraining Account" used for the retraining of unemployed persons.

The following charts illustrate Unemployment Fund experience from 2000 to 2011.

Figure 6.3. Unemployment Fund Experience, 2000 to 2011



Between 2000 and 2008 each of the four charts above depicts what may be termed "good" experience for a pay-as-you-go financed, short-term income replacement benefit:

- Expenditure generally in line with contributions (top left chart)
- Relatively small surpluses or deficits (top right chart)
- Total reserves remain relatively stable or growing (lower left chart)
- Reserve-expenditure fluctuating within a narrow range but remaining at around 4 (lower right chart)

These trends all changed in 2009 with the onset of the recession and increased unemployment claims:- the gap between expenditure and contributions widened, annual deficits grew, reserves began to decline and the size of reserves relative to annual payouts decreased sharply.

The following table highlights Fund income and expenditure for 2009 to 2011.

Table 6.1. Unemployment Fund Experience, 2009 to 2011 ($'s in millions)

	2009	2010	2011
Contribution Income	$31.8	$36.4	$$32.8
Investment Income	$6.7	$5.8	$4.6
Total Income	**$38.5**	**$42.2**	**$37.4**
Benefits	$44.0	$46.2	$53.5
Administrative Expenses	$2.2	$2.8	$1.9
Transfer to Retraining Account	-	$10.0	-
Total Expenditure	**$46.2**	**$59.0**	**$55.4**
Excess of Income Over Expenditure	$ (7.7)	$ (16.8)	$ (17.9)
Year-end Reserves	**$120.1**	**$103.3**	**$85.4**
Contribution Rate	1.50%	1.50%	1.50%
Benefit Rate (as % of IE)	2.07%	1.90%	2.44%
Yield on Reserves	5.5%	5.3%	5.0%
Administrative Costs as of IE	0.10%	0.12%	0.09%
Reserve-expenditure ratio	2.6%	1.8%	1.5%

As shown above, the Fund incurred deficits in each of the three years in the review period. In 2010 a transfer of $10 million from the Unemployment Fund to the Retraining Account was made and in August 2010, the maximum benefit period was extended from 26 weeks to 40 weeks. These policy decisions further contributed to increasing costs and reserves falling from $128.8 million at the end of 2008 to $85.4 million at the end of 2011.

At the end of 2011, the reserve-expenditure ratio of 1.5 was only 50% more than the minimum ratio of 1 considered acceptable for the Unemployment Fund.

6.2 Unemployment Fund Investments

With cash flow deficits and declining reserves approaching one year's worth of expenditure, how Fund assets are invested is critical to being able to meet benefit obligations as they become due.

Following was the asset mix of the Unemployment Fund in December 2011.

Table 6.3. Unemployment Fund Investments, December 2011

Asset Class	Amount (millions of $'s)	% of Total
Deposits	19.5	26.0
Treasury Bills	1.0	1.3
Treasury Notes	35.2	46.9
Debentures	19.3	25.7
Total	**75.0**	**100.0**

Of the four criteria under which social security investments are typically made, yield, security, liquidity and social utility, liquidity is now the most critical for the Unemployment Fund. As shown above, all investments are in fixed-income securities with 74% in Government of Barbados debt of varying maturities.

Unlike the National Insurance Fund, the Unemployment Fund does not have a written Investment Policy that guides how and where its investments are placed. Even though the Fund has been declining in size and may have to hold mainly liquid assets in the near-term, it is recommended that a written investment policy be created and approved at all levels.

6.3 Subsequent Events

This report is being prepared in late 2013. During 2012 and the first eight months of 2013 there were further reductions in reserves due to expenditure being well in excess of combined contribution and benefit expenditure. Although expenditure in 2013 is down when compared to 2012, total reserves stood at $56.2 million as of August 2013 and the year-to-date deficit was 0.5% of insurable wages.

6.4 Short-term Unemployment Fund Projections

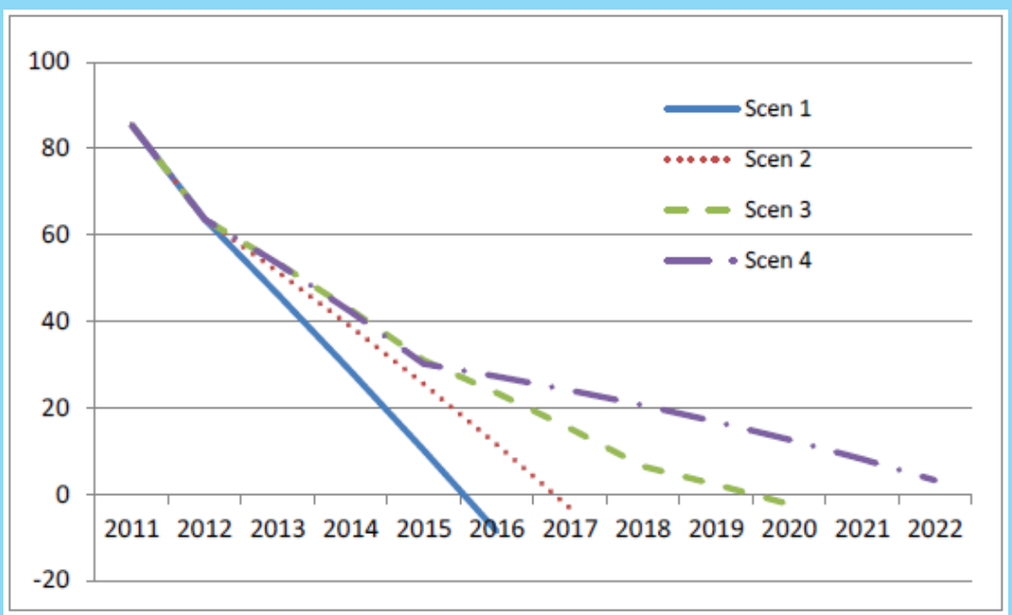
To determine the adequacy of the current contribution rate and reserve funds to support future benefit expenditure 10-year projections of the Unemployment Fund under four different scenarios are presented. Key assumptions for these projections are shown in Table 6.4. Common assumptions for all scenarios are an investment yield of 5.0% and administrative costs of 0.10% of insurable earnings and no increase in the contribution rate.

Table 6.4. Key Assumptions For Unemployment Fund Projections

Scenario	Annual Increase in Contribution Income	Benefits As % of Insurable Earnings		
		2014 - 2015	2016 - 2018	2019 - 2021
1	-2%	2.25%	2.25%	2.25%
2	0%	2.0%	2.0%	2.0%
3	2%	1.9%	1.7%	1.5%
4	3%	1.9%	1.5%	1.5%

Figure 6.4 below illustrates the results of these projections:

Figure 6.4. Projected Unemployment Fund – Existing Rules



Under all scenarios reserves are projected to fall below the "one-times" expenditure threshold (approximately $50 million) and in three of the four scenarios, reserves would be depleted between 2016 and 2020.

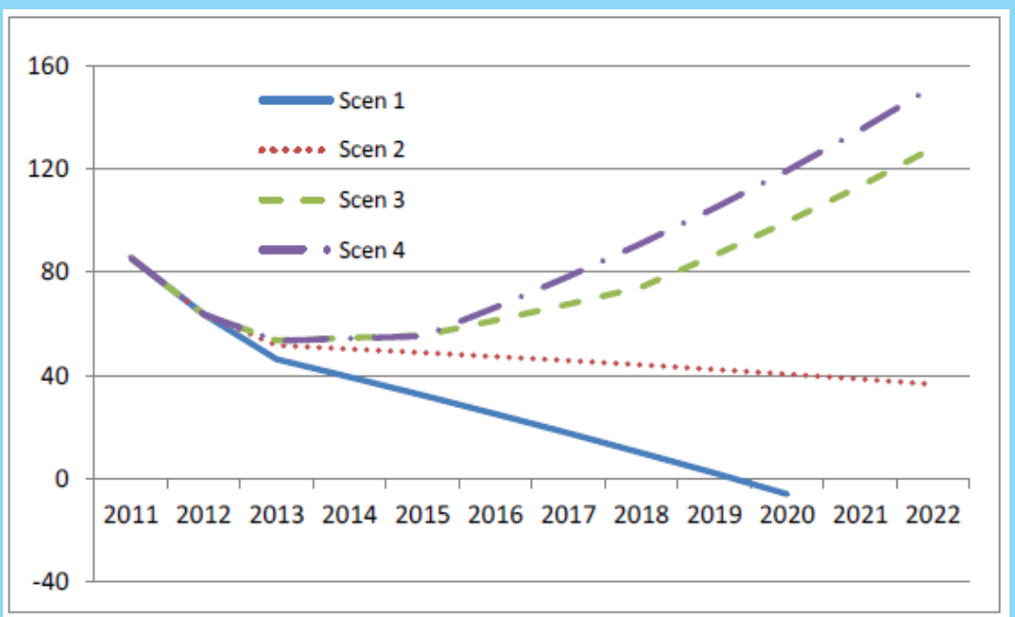
6.5 Financing Future Unemployment Benefits

Unless there is immediate and dramatic turnaround in the economy which leads to growth in employment and wages, and a reduction in unemployment benefit claims, additional financing is required in the short-term to boost the reserves of the Unemployment Fund. Two options for such additional financing are:

(a) Increase the contribution rate;
(b) Transfers from the Severance Fund.

Projections of the Unemployment Fund where the contribution rate is increased by ½% (to 2.0%) starting in 2014, are shown below. Under two of the four scenarios the ½% rate increase would be adequate for 10 years while under the other two scenarios a further increase would likely be necessary to maintain a reserve of at least $50 million.

Figure 6.5. Projected Unemployment Fund – ½% Increase in Contributions



Note: Includes actual finances for 2012 and benefit expenditure of 1.95% of IE for 2013

A transfer of $50 million into the Unemployment Fund instead of a ½% rate increase would provide a short-term boost to the Fund but will not provide a medium-term solution to ensuring sustainability. It would also defer for a few years the increased burden on workers and employers that a rate increase would create.

While transferring reserves from the Severance Fund, which is very well funded, may seem like a relatively easy solution, legal opinions suggest that it may not be possible to do so. The main reason offered is that contributions made for a particular purpose should be used for that purpose only. Also, there is a slight difference between the source of contributions for each fund:- employers only for the Severance Fund and equal sharing by employer and workers towards the Unemployment Fund. The Board should seek a definitive opinion from the Attorney General's Office and possibly a policy decision from Cabinet on this matter. In a broad social security context, it would appear appropriate to transfer from one fund to another, especially since one fund is extremely over funded relative to its annual payout. (See Chapter 7)

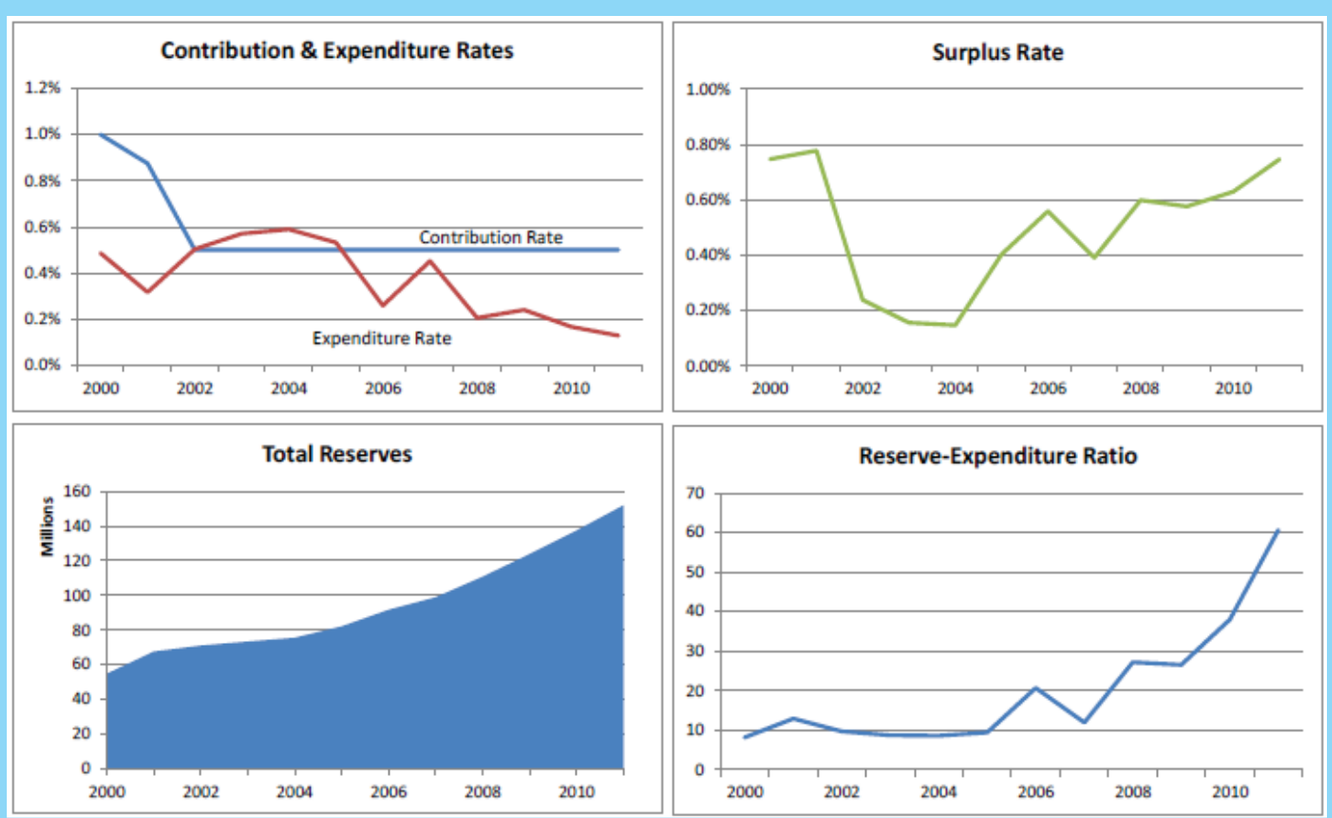
Chapter 7 - The Severance Fund

The National Insurance Board administers the Severance Payments Fund as established under the Severance Payments Act. The Severance Payments Fund provides a 25% refund to employers who make the required severance payments in accordance with the Severance Payments Act. In cases where the employer refuses to, or is unable to make such payment, the Severance Fund makes the payment directly to the employee and the amount paid is recoverable by the National Insurance Board from the employer.

7.1 Severance Fund Experience

Since October 2001, the contribution rate for Severance benefits has been fixed at 0.5% of insurable earnings. This rate is payable by the employer only. There were no amendments to Severance payment rules during the review period. Further details of eligibility conditions and rates of payment can be found in Appendix A.
It may be expected that experience of the Severance Fund during the review period would be similar to that of the Unemployment Fund. However, as illustrated by the charts below, this was not the case.

Figure 7.1. Severance Fund Experience, 2000 to 2011



Since 2004 the Severance Fund had a very favourable experience:

- Expenditure lower than contributions with widening gaps in recent years (top left chart)
- Increasing surpluses (top right chart)
- Increasing reserves (lower left chart), and
- Significant increases in the reserve-expenditure ratio (lower right chart)

The following table highlights Fund income and expenditure for 2009 to 2011.

Table 7.1. Severance Fund Experience, 2009 to 2011 ($'s in millions)

	2009	2010	2011
Contribution Income	$9.7	$10.9	$9.8
Investment Income	$6.2	$6.4	$7.3
Total Income	**$15.9**	**$17.3**	**$17.1**
Net Benefits Paid	$2.4	$2.8	$1.8
Administrative Expenses	$2.3	$0.8	$0.7
Total Expenditure	**$4.7**	**$3.6**	**$2.5**
Excess of Income Over Expenditure	$11.2	$13.7	$14.6
Year-end Reserves	**$123.8**	**$137.5**	**$152.0**
Contribution Rate	0.50%	0.50%	0.50%
Benefit Rate (as % of Insurable Earnings)	0.12%	0.13%	0.09%
Reserve-expenditure Ratio	26.3%	38.0%	60.6%
Yield on Reserves	5.4%	5.0%	5.2%
Admin. Expenses as % of Insurable Earnings	0.12%	0.04%	0.03%

During each of the three years under review not only was contribution income greater than total expenditure, investment income also exceeded total expenditure each year. Total reserves increased from $112.6 million to $152.0 million. While the time it takes to pay Severance claims (800 claims pending at the end of 2011) has often been lengthy, this delay does not change the previous statement that contributions are well in excess of expenditure.

7.2 Fund Investments

The following table shows the asset mix of the Severance Fund as at December 2011.

Table 7.3 Severance Fund Investments, December 2011

	Amount (millions of $'s)	% of Total
Deposits	25.2	18.3
Treasury Bills	18.5	13.4
Treasury Notes	27.9	20.2
Debentures	62.0	44.9
Bonds	4.4	3.2
Total	**138.0**	**100.0**

As shown above the Severance Fund is fully invested in fixed-income securities, with just under 80% held in Government of Barbados securities of varying maturities.

The Severance Fund has grown significantly in size and contribution income is now well in excess of total expenditure. Therefore, liquidity need not be a primary consideration for Fund investments. Instead, the Severance Fund should have a much longer-term investment horizon than was the case in December 2011.

Unlike the National Insurance Fund, the Severance Fund does not have a written Investment Policy that guides how and where its investments are placed. As the Fund grows, without any need for liquid assets, aiming for a higher rate through longer-term securities should be considered. It is therefore recommended that such a written investment policy be created and approved at all levels.

7.3 Future Severance Payments

The low payouts and growth in reserves of the Severance Fund, especially during a recessionary period, raises questions regarding the purpose and current relevance of the provisions of the Severance Payments Act in the current labour market and economy. The Severance Payments Act came into force in 1973 and was last amended in 1991. Representatives of both workers and employers indicated that the low payouts in recent years may be due to:

(i) Employers using redundancy as a last resort to reduce operating costs, and
(ii) Even with the existence of Severance Payments Act and reimbursement from the Severance Fund, the cost of making employees redundant, especially long-serving employees, is extremely high.

Following are three recommendations regarding the Severance Fund:

a) Eliminate the ½% contribution rate paid by employers to the Severance Fund. If there is no change to the rules for payments out of the Fund, investment income alone is expected to cover total expenditure.

b) Perform a comprehensive review of the objectives and key features of the Severance Payments Act and determine whether they are relevant to current employment practices and employer behaviour regarding redundancy, and if not, recommend changes.

c) If legally possible, consider transferring at least $50 million to the Unemployment Fund. (See Section 6.5)

Section III
Good Governance

Chapter 8 - Good Governance

A very influential but often invisible contributor to the state of public sector agencies is political interference and the failure to adopt and follow good governance practices. For example, poor governance practices and political interference at several regional social security schemes have resulted in overstaffing, poor investment diversification, failure to implement reforms, and the failure to disclose key reports that outline the state of the fund's current and future finances. While the Barbados NIS does not have a history of excessive political interference, inadequate staffing of the National Insurance Office, growing concentration of investments in Government debt, contrary to investment and actuarial advice, extensive delays in conducting financial audits and delays in publishing annual reports, are issues with which the NIS has been plagued.

To assist social security schemes like the Barbados NIS, the International Social Security Association (ISSA) in 2011 published ISSA Good Governance Guidelines for Social Security Institutions. These guidelines provide ISSA member organizations with guiding principles and practical guidelines on good governance. They also present a virtual checklist of essential elements that help engender and support good governance within the institution. It is strongly recommended that the Board adopt the principles and guidelines included in ISSA's Good Governance Guidelines and initiate steps to ensure that good governance practices are commonplace in all aspects of the NIS's administration and operations.

8.1. ISSA Good Governance Guidelines

ISSA defines governance as:

> *"the manner in which the vested authority uses its powers to achieve the institution's objectives, including its powers to design, implement and innovate the organisation's policies, rules, systems and processes, and to engage and involve stakeholders."*

ISSA's *Good Governance Guidelines* further suggests that "good governance implies that the exercise of the vested authority is accountable, transparent, predictable, participative and dynamic." It describes these five principles as follows:

Accountability is the ability to hold legally responsible the officials who are in charge of the institution for managing the program prudently, efficiently and equitably.

Transparency is the availability and accessibility of accurate, essential and timely information to stakeholders and in reference to the decision-making process, promotes honesty, integrity and competence, and discouraging wrongdoing.

Predictability refers to the consistent application of the law, policies, rules and regulations. Surprises and sudden changes in contribution rates, benefit entitlements or other features could undermine the credibility of the programme.

Participation refers to the active education, engagement and effective involvement of stakeholders to ensure the protection of their interests.

The principle of *dynamism* is defined as the element of positive change in governance. While the first four principles of governance may well be applied in the context of maintaining the status quo, dynamism refers to changing and improving by doing things more efficiently and equitably, and by responding to the evolving needs of insured persons.

In addition to outlining in detail the five good governance principles as they specifically relate to Boards and Management, the Good Governance Guidelines include further guidelines in six specific areas that are of common concern to social security institutions. These guidelines, which support and promote the good governance principles listed above, are provided for the following areas:

(a) Actuarial soundness

(b) Enforcing the prudent person principle in investment management

(c) Prevention and control of corruption and fraud

(d) Service standards

(e) Staffing policies & performance appraisals

(f) Investments in Information and Communication Technology infrastructure

The third component of the ISSA Good Governance Guidelines is the "Questionnaire on Good Governance." Through hundreds of specific multiple choice questions on general governance practices of the Board and Management as it relates to the five principles and six specific areas of social security administration, institutions are able to determine the extent to which they practice good governance and where improvements are required. Completion of this document will be the ideal start to the Board's adoption of ISSA's recommended good governance principles and guidelines.

A Good Governance Guidelines manual that is localized for the NIS could include specific sections that deal with the following:

(a) Powers of the Minister

(b) Functions and duties of the Board

(c) Terms of reference for the Chairman, Director and Committees of the Board

(d) Board Member orientation

(e) Board Member code of conduct

(f) Disclosure of information

8.2. ISSA Investment Guidelines

With $4.1 billion in trust funds, the prudent investment of securities is critical to the long-term sustainability of the National Insurance Fund. In addition to its Good Governance Guidelines, ISSA in 2012 created ISSA Investment Guidelines which allow social security institutions to follow a "Governance Journey" moving from investment government principles to structures and processes which include defining and monitoring an investment strategy and monitoring of performance and reporting. These investment guidelines are consistent with the ISSA Good Governance Guidelines discussed in the previous section.

ISSA is the world's leading organization bringing together national social security administrations and agencies. It provides information, research expert advice and platforms for members to build and promote dynamic social security systems. As a member organisation the NIS should take full advantage of the extensive work of the ISSA and make full use of the Good Governance Guidelines, Investment Guidelines, along with other tools and research designed to strengthen various aspects of the its administration.

Statement of Actuarial Opinion

It is my opinion that for this report of the 14th Actuarial Review of the National Insurance, Unemployment and Severance Funds:

- 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.

Derek M. Osborne, FSA
Chief Actuary

Horizonow Consultants
December 31st, 2013

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Barbados Economic and Social Report 2012, Ministry of Finance & Economic Affairs, 2012

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Focus on the Budget, Ernst & Young, 2013

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Population Projections Barbados 2005 to 2025, Alyson G. Forte, 2005

Various reports and publications by the Barbados Statistical Service

Appendix A - Summary of Contribution & Benefit Provisions

A.1 Funds, Benefits, Insured Persons & Contribution Rates

The National Insurance Board, through three separate funds, provides for the following benefits and assistances:

1. National Insurance Fund

    - Long-term benefits: Old-age, Invalidity and Survivors' Benefits.
    - Short-term benefits: Sickness & Maternity Benefit, Funeral Grant.
    - Employment Injury Benefits: Injury Benefit, Disablement Benefit, Medical Expenses, Death Benefit and Funeral Grant.
    - Non-contributory pensions: Old-Age (for existing pensioners at December 31, 1999)

2. Unemployment Fund

    - Unemployment Benefit

3. Severance Payment Fund

    - Severance Payments
    - Rebates

Employed and self-employed persons between 16 and pensionable age (66 years effective January 2010) are covered for the above contingencies as follows:

- Employed persons in the private sector: All contingencies.
- Temporary government employees: All contingencies except severance.
- Permanent government employees: All contingencies, except sickness, unemployment and severance.
- Self-employed persons: All contingencies except employment injury benefits, unemployment and severance.

Employed persons under 16 or over age normal pension age are covered for employment injury benefits only.

Earnings used for determining contributions and benefits are limited to a weekly or monthly ceiling. If earnings are $91 per month, no contributions are payable. Earnings include basic salary and all other remuneration in cash or kind such as bonuses.

Starting 2005 the earnings ceiling has been indexed annually in line with changes in average wages. The monthly ceiling on insurable wages has increased since 1967 as follows:

Period	Weekly	Monthly
1967-1973	$50	
1974 -1977	$100	
1978-1981	$230	$1,000
1982-1984	$506	$2,200
1984-1986	$598	$2,600
1987-1991	$600	$2,600
1991-2004	$715	$3,100
2005	$736	$3,190

Period	Weekly	Monthly
2006	$759	$3,290
2007	$782	$3,390
2008	$819	$3,550
2009	$858	$3,720
2010	$900	$3,900
2011	$944	$4,090
2012	$965	$4,180
2013	$985	$4,270

Contributions are computed as a percentage of insurable earnings. Rates of contributions vary according to the type of employment. The contribution rates applicable to the four main categories of contributors for 2012 are shown below.

	National Insurance & Non-Contributory Pensions		Unemployment Benefits		Severance Benefits	
	E'ee	**E'er**	**E'ee**	**E'er**	**E'ee**	**E'er**
Employed Persons	8.75%	9.5%	0.75%	0.75%	-	0.5%
Temporary Government	8.75%	9.5%	0.75%	0.75%	-	-
Permanent Government	8.20%	8.95%	-	-	-	-
Self-employed*	15.5%		-	-	-	-

* Self-employed are not covered for Employment Injury benefits.

The average contribution rate payable in 2008 for National Insurance and Non-Contributory pensions is approximately 18%.

A.2. Summary of Benefits 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: Full Pension: Normal pension age: 66 from 2010 to 2013, 66½ from 2014 to 2017 and 67 thereafter. Pensions payable at normal pension age are not dependent on retirement from the workforce.

Reduced Pension: 60 to normal pension age. This pension is dependent on retirement from the workforce.

Increased pension: From normal pension age to age 70.

Amount Of Benefit: 40% of average earnings over the best five years, plus 1% of total insurable earnings on which contributions were based subsequent to the first 500 weekly contributions. These rates apply to persons attaining normal pension age up to 2012.

Effective 2023, pension accrual rates will be 2% for each 50 weekly contributions up to 1,000 weekly contributions plus 1.25% for each further 50 weekly contributions subsequent to the first 1000 weekly contributions up to a maximum of 60%. For persons attaining normal pension age between 2013 and 2022, 50% of the benefit will be based on the pre-2013 basis and 50% on the post-2022 basis.

Pensions are reduced by ½% for each month the age at award is less than normal pension age and increased by ½% for each month the age at award exceeds normal pension age.

Maximum Pension: 60 % of average earnings over the best five years.

Minimum Pension: The listed minimum pension is $175.00 per week. The minimum pension and all pensions will increase each year in accordance with the lesser of 3-year average wage increases and 3-year average price inflation.

(b) OLD-AGE CONTRIBUTORY GRANT

Contribution Requirement: 50 paid or credited weekly contributions.

Eligibility: Other than for the contribution requirement, the applicant must be eligible for Old-Age Contributory Pension.

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 paid weekly contributions.

Eligibility: The applicant has exhausted the maximum period for sickness benefit and is permanently incapable of work, and less than normal pension age.

Amount Of Benefit: 40% of average earnings over the best three years, plus 1% of total insurable earnings on which contributions were based subsequent to the first 500 weekly contributions.

Duration Of Pension: Payable for as long as invalidity continues or until normal pension age when converted to an old-age contributory pension.

Minimum Pension: As for Old-Age pension.

(d) INVALIDITY GRANT

Contribution Requirement: 50 paid or credited weekly contributions.

Eligibility: Other than for the contribution requirement, the applicant must be eligible for invalidity pension.

Amount Of Benefit: Same as Old Age Contributory grant.

(e) SURVIVORS' PENSION

Contribution Requirement: The deceased, at time of death, was receiving or was qualified to receive an invalidity or old-age contributory pension.

Eligibility: Widow or widower married for at least three years (includes common-law spouse) or a child who is under age 16, 25 if in full-time education or invalid.

Amount Of Benefit: The proportion of Invalidity pension shown below:

Widow or widower: 50% if age 50 or over and married for at least 3 years; 33⅓% if between 45 and 50 and married for at least 3 years;

Child: 16 ⅔% – up to 3 children at any one time if a spouse is also entitled;

Child (orphan or disabled): 33⅓%;

Maximum benefit: 100%

Duration Of Benefit:

- Widow or widower age 45 or over at time of death and married for 3 years, or disabled: life pension or until the beneficiary is entitled to a larger Old Age pension in his/her own right.
- For a widow or widower under age 45 and not disabled: one year.
- For children, age 16 or 25 if in full-time education, for as long as invalidity continues, if invalid.

(f) 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: Same as Old Age Contributory or Invalidity Grant.

(g) NON-CONTRIBUTORY OLD-AGE PENSION

Eligibility: Current normal pension age or over, or in the case of a blind person or a deaf mute aged 18 or over. Applicant must also be a Barbados citizen or a permanent resident who has lived in Barbados for a period of:

For a citizen: 12 years since attaining age 40 or an aggregate of 20 years since attaining age 18;

For a permanent resident: 15 years since attaining age 40 or an aggregate of 20 years since attaining age 18.

Amount Of Benefit: For 2013, $142 per week. NIS is only responsible for the first $74.75 per week as since 1998, all increases above this level and the cost associated with new awards after 1999 are being met by the Consolidated Fund. The pension payable is reduced to take account of any other pensions being received.

A.2.2 SHORT-TERM BENEFITS

(a) SICKNESS BENEFIT

Contribution Requirements:

- 7 weekly paid or credited contributions in the quarter but one before the quarter in which the person became ill and either,
  i. 39 weekly paid or credited contributions in the four quarters ending with the quarter but one before the quarter in which the person became ill, or
  ii. Person is engaged in employment immediately before becoming ill.

Self-employed persons must satisfy criteria (i).

Waiting Period: 3 days. If incapacity lasts for two weeks or more, benefit is payable from the first day. Two periods of illness separated by less than thirteen weeks are treated as one.

Amount Of Benefit: 66 ⅔% of average weekly insurable earnings during the quarter but one before the quarter in which the person became ill. Benefit paid on the basis of six days per week.

Duration Of Benefit: Up to 26 weeks, plus an additional 26 weeks if at least 150 weekly contributions were paid and 75 contributions paid or credited in the preceding three contribution years.

(b) MATERNITY BENEFIT

Contribution Requirement:

For an employed person, insured for at least 26 weeks, and paid at least 16 contributions in the two quarters but one before the quarter the benefit becomes payable.

For a self-employed person, not less than 39 contributions should have been paid or credited in the four quarters ending with the quarter but one before the quarter benefit becomes payable, and not less than 16 contributions should have been paid in two quarters but one before the quarter the benefit becomes payable.

Amount Of Benefit: 100% of average weekly insurable earnings over the two quarters but one before benefit becomes payable. Benefit is paid on the basis of six days per week.

Duration Of Benefit: Up to 12 weeks.

(c) MATERNITY GRANT

Eligibility: Payable to a woman who does not satisfy the contribution requirement for maternity benefit but whose spouse has paid the number of contributions that would have enabled the woman to qualify for maternity benefit had they been paid by her.

Amount Of Grant: $1,125 effective January 2013. This amount will increase each year in accordance with the lesser of 3-year average wage increases and 3-year average price inflation.

(d) FUNERAL GRANT

Eligibility: Insured person had made at least 50 paid contributions, or if fewer, would have been entitled to either of sickness or maternity. A grant is also payable in respect of the death of the spouse of an insured in respect of whom a grant would have been payable had he/she died.

Amount Of Grant: $1,950 effective January 2013. This amount will increase each year in accordance with the lesser of 3-year average wage increases and 3-year average price inflation.

I.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 a prescribed disease.

Amount Of Benefit: 90% of average insurable earnings in the quarter but one before quarter in which accident or disease occurred. (If past employment is for a shorter period, the average insurable earnings of the last 13 weeks, or if less, of someone in similar employment, will be used.)

Duration Of Benefit: 52 weeks.

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

(b) DISABLEMENT BENEFIT

Eligibility: Disablement resulting from an accident at work or a prescribed disease.

Waiting Period: If injury benefit is awarded, the period of payment 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 30%, a grant equal to 365 times the weekly benefit rate times the degree of disablement is paid.
- If degree of disablement is 30% or more, a weekly benefit of the injury benefit amount times the degree of disablement is paid.
- In addition, 50% of disablement pension may be paid if the person requires constant help.

(c) DEATH BENEFIT

Eligibility: Dependants as defined for survivors' benefit, but other persons who were dependent upon the earnings of the deceased may also qualify.

Amount Of Benefit: Proportion of disablement pension - same percentage as for Survivors benefits. Other dependants receive 16⅔%.

(d) MEDICAL EXPENSES

Expenses Covered:

- Medical, surgical, dental and hospital treatment, skilled nursing services and supply of medicines.
- Supply and maintenance of artificial limbs, dentures, spectacles and other apparatus
- Travelling expenses to obtain any of the above.

(e) FUNERAL GRANT

Condition Of Payment: Death of insured must be related to employment. (Only one funeral grant is payable.)

CARICOM Agreement On Social Security

Some former contributors with fewer contributions than required for Age, Invalidity and Survivors pensions, may qualify for a pension under the CARICOM Agreement on Social Security based on the total of all contributions made in participating countries.

A.2.3 UNEMPLOYMENT BENEFITS

Contribution Requirement:

- Insured for at least 52 weeks.
- 20 weekly contributions paid or credited in three consecutive quarters ending with the quarter but one before that in which unemployment began.
- 7 weekly contributions paid or credited in the quarter but one before that in which unemployment began.

Amount Of Benefit: 60% of average insurable earnings during the quarter but one before that in which unemployment began.

Waiting Period: 3 days. If unemployment lasts for two weeks or more, benefit is payable from the first day. Two periods of unemployment separated by less than thirteen weeks are treated as one.

Duration Of Benefit: 26 weeks of continuous unemployment, or (if different periods of unemployment occurred) a maximum of 26 weeks in the last year. Between August 2010 and June 2012 the maximum duration was 40 weeks.

A.2.4. SEVERANCE PAYMENTS

The Severance Payments Scheme provides for the payment of compensation to employees who are dismissed by reason of redundancy or natural disaster or who terminate the contract of employment after a period of lay-off or short-time. Under the scheme:

- The severance payment is payable to the employee by the employer,
- If the employer refuses or is unable to make such payment the Severance Fund makes the payment to the employee; (the payment is then recoverable by the National Insurance Board from the employer)
- An employer who pays the employee a severance payment in accordance with the Severance Payments Act is entitled to a rebate of 25% of the payment from the Severance Fund.

Employees aged 16 to normal pension age are covered for Severance payments with the following exceptions:

- persons employed in the Public Service, by any Statutory Board or in employment that is pensionable under any enactment;
- share fishermen;
- persons employed by their husbands or wives;
- domestic servants who are closely related to their employers;
- partners, independent contractors and freelance agents.

Eligibility: The employee must have completed 104 continuous weeks of employment with the same employer.

Amount Of Benefit: 25% of benefits in line with the scale shown below are refunded to the employer:

- 2.5 weeks basic pay for each year worked, up to 10 years;
- 3 weeks basic pay for each year worked between 10 and 20 years;
- 3.5 weeks basic pay for each year worked between 20 and 33 years.

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 modelling tools to fit the specific case of Barbados and the National Insurance Fund. These modelling 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 Barbados' future demographic and economic environment. Next, projection factors specifically related to National Insurance 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 Barbados population has been projected beginning with totals obtained from the preliminary results of the 2010 national census and by applying appropriate mortality, fertility and migration assumptions. For the Best Estimate scenario the total fertility rate is assumed to remain at 1.65. Table B.1 shows ultimate age-specific and total fertility rates. For the Pessimistic and Optimistic scenarios, total fertility rates are assumed to be at 1.6 and 1.7, respectively.

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

Age Group	2010	Ultimate Fertility Rates		
		Optimistic	Best Estimate	Pessimistic
15 – 19	0.045	0.043	0.041	0.040
20 – 24	0.085	0.085	0.083	0.080
25 – 29	0.078	0.082	0.080	0.077
30 – 34	0.073	0.073	0.071	0.069
35 – 39	0.041	0.043	0.042	0.040
40 – 44	0.012	0.013	0.013	0.012
45 – 49	-	0.001	0.001	0.001
TFR	**1.65**	**1.7**	**1.65**	**1.6**

Mortality rates have been determined using the 2000 Life Table produced by the Barbados Statistical Service. These rates have been adjusted slightly so that the number of projected deaths closely matches the actual number of deaths from 2000 to 2011. Improvements in life expectancy for the *Best Estimate* scenario have been assumed to follow the "slow" rate as established by the United Nations with a "medium" rate assumed for the Pessimistic scenario and "very slow"1 for the *Optimistic* scenario. Sample mortality rates for the *Best Estimate* scenario and the life expectancies at birth and at age 67 for sample years are provided in Table B.2. Life expectancies at age 67 in 2071 for the three projection scenarios are shown in Table B.3.

Table B.2. Sample Mortality Rates & Life Expectancies

	Males			Females		
Age	**2011**	**2041**	**2071**	**2011**	**2041**	**2071**
0	0.0111	0.0083	0.0065	0.0106	0.0078	0.0060
5	0.0003	0.0002	0.0001	0.0002	0.0001	0.0000
15	0.0005	0.0004	0.0003	0.0003 `	0.0002	0.0001
25	0.0015	0.0010	0.0008	0.0008	0.0007	0.0006
35	0.0022	0.0016	0.0012	0.0013	0.0010	0.0008
45	0.0040	0.0031	0.0024	0.0022	0.0017	0.0013
55	0.0075	0.0061	0.0051	0.0046	0.0036	0.0029
65	0.0142	0.0121	0.0105	0.0094	0.0069	0.0053
75	0.0346	0.0308	0.0280	0.0259	0.0194	0.0152
85	0.0926	0.0868	0.0822	0.0742	0.0636	0.0559
95	0.1989	0.1950	0.1918	0.1841	0.1728	0.1639
Life Expectancy at:						
Birth	**75.9**	**78.2**	**79.9**	**80.1**	**82.7**	**84.7**
Age 67	**16.9**	**17.6**	**18.2**	**18.9**	**20.5**	**21.6**

Table B.3. Age 67 Life Expectancies

		2071		
	2011	**Optimistic**	**Best Estimate**	**Pessimistic**
Male	16.9	17.6	18.2	18.8
Female	18.9	20.4	21.6	22.8

Net migration (in minus out) for each scenario and 10-year age group is shown below for years 2015 and 2030.

Figures B.1. Net Immigration – Total Annual & Age-Specific Rates

Age	2015			2030+		
	Optimistic	Best Estimate	Pessimistic	Optimistic	Best Estimate	Pessimistic
0 - 9	(3)	(13)	(22)	44	25	6
10 - 19	(4)	(14)	(25)	50	28	7
20 - 29	(20)	(81)	(141)	282	161	40
30 - 39	(9)	(38)	(66)	131	75	19
40 - 49	(2)	(7)	(12)	24	14	3
50 - 59	0	0	0	(0)	(0)	(0)
60 - 69	0	1	2	(3)	(2)	(0)
70+	0	1	1	(2)	(1)	(0)
All Ages	**(38)**	**(150)**	**(263)**	**525**	**300**	**75**

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 20 years age-specific labour force participation rates for females are assumed to increase by 2%. Further, for both males and females for ages above 57, participation rates are assumed to gradually approach the rates that in 2011 apply to persons three years younger. Table B.3 below shows the assumed age-specific labour force participation rates in 2011 and 2071. Between these two years, rates are assumed to change linearly.

Table B.4. Age-Specific & Total Labour Force Participation Rates

Age	Males		Females	
	2011	2071	2011	2071
17	28%	28%	21%	22%
22	78%	78%	69%	73%
27	92%	92%	86%	91%
32	92%	92%	87%	92%
37	95%	95%	87%	91%
42	93%	93%	87%	91%
47	93%	93%	86%	90%
52	91%	91%	81%	85%
57	86%	89%	70%	78%
62	66%	78%	45%	58%
67	14%	46%	7%	23%

Year	Males	Females
2008	77%	69%
2013	77%	69%
2018	78%	70%
2028	79%	72%
2038	80%	72%
2048	79%	71%
2058	79%	71%
2068	79%	71%

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 0.2% less than 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 may be found in Table 4.1.

B.2 Projection of National Insurance Income & Expenditure

This actuarial review addresses all National Insurance Fund revenue and expenditure items. For Short-term and Employment Injury benefits, income and expenditure are projected as a percentage of insurable earnings. Projections of pensions are performed following a year-by-year cohort methodology. For each year up to 2071, 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 earnings, 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 plan experience and applied to the population entitled to benefits. Investment income is based on the assumed yield on the beginning-of-year reserve and net cash flow in the year. National Insurance'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 National Insurance Population Data and Assumptions

The data required for the valuation of the National Insurance Fund is extensive. As of December 31st, 2011, 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 National Insurance specific input data and the key assumptions used in this report are provided in tables B.5 through B.9.

Table B.5. 2011 Active Insured Population, Earnings & Past Credits

	#of Active Insureds		Average Monthly Insurable Earnings		Average # of Years of Past Credits	
Age	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
15 – 19	1,502	1,486	1,101	939	1.2	1.1
20 – 24	5,304	5,740	1,756	1,542	4.1	3.9
25 – 29	6,454	7,673	2,327	2,274	7.8	7.6
30 – 34	6,086	7,511	2,628	2,515	11.7	11.5
35 – 39	6,526	8,139	2,744	2,525	15.8	15.5
40 – 44	6,561	7,812	2,801	2,528	20.0	19.6
45 – 49	6,719	8,308	2,839	2,463	24.2	23.7
50 - 54	6,481	7,733	2,880	2,470	28.4	27.9
55 – 59	5,490	6,133	2,924	2,464	32.7	32.1
60 – 64	3,440	3,406	2,802	2,248	34.9	34.2
65+	1,213	956	2,559	1,935	35.0	34.3
All Ages	**55,776**	**64,897**	**2,597**	**2,334**	**18.4**	**18.1**

Table B.6. Pensions in Payment - December 2011

Age	Old Age Benefit		Invalidity Benefit		Survivors Benefit		Disablement & Death Benefits		Non-Contributory	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
0 – 4	-	-	-	-	-	166				
5 – 9	-	-	-	-	-	353				
10 – 14	-	-	-	-	-	385				
15 – 19	-	-	-	-	-	173				
20 – 24	-	-	-	-	1	-	1	1	-	-
25 – 29	-	-	4	3	1	1	2	3	-	-
30 – 34	-	-	14	25	1	1	8	2	-	-
35 – 39	-	-	37	35	18	16	12	5	-	-
40 – 44	-	-	78	76	34	20	21	11	-	-
45 – 49	-	-	140	169	41	27	32	13	-	-
50 – 54	-	-	282	326	70	48	47	27	-	-
55 – 59	-	-	403	554	111	47	39	11	-	-
60 – 64	823	809	552	692	155	24	18	10	-	-
65 – 69	3,381	3,247	-	-	210	24	8	6	-	-
70 – 74	2,827	2,871	-	-	159	11	7	9	-	-
75 – 79	2,020	2,159	-	-	212	4	10	1	482	1,480
80 – 84	1,295	1,401	-	-	205	3	7	1	333	1,356
85 – 89	687	816	-	-	-	-	-	-	250	974
90 – 94	266	334	-	-	-	-	2	-	149	625
95 – 99	77	119	-	-	-	-	-	-	50	264
# of Pensioners	**11,376**	**11,756**	**1,510**	**1,880**	**1,218**	**1,303**	**214**	**100**	**1,26**	**4,699**
Avg Monthly Pension	**$1,218**	**$ 973**	**$ 1,171**	**$ 1,020**	**$ 859**	**$ 352**	**$ 870**	**$ 885**	**$ 324**	**$ 324**

Note: The average amount for Non-contributory pensions is the amount payable from the NIF.

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.7. Density Of Contributions

Age	Males	Females
17	41%	36%
22	71%	67%
27	82%	81%
32	84%	85%
37	87%	87%
42	88%	89%
47	89%	90%
52	91%	90%
57	90%	91%
62	90%	90%

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

Table B.8. Rates of Entry Into Invalidity

Age	Males	Females
17	-	-
22	0.204	-
27	0.612	0.408
32	0.884	0.680
37	1.904	1.292
42	1.768	2.584
47	4.012	4.080
52	5.304	7.344
57	9.248	12.580

Table B.9, shows the assumed probability of Survivor benefit claims and the average ages of new claimants, groups by the age of the deceased.

Table B.9. Probability of a Deceased Having Eligible Survivors & Their Average Ages

Age	Males Probability of Eligible Spouse	Avg # of Eligible Children	Females Probability of Eligible Spouse	Avg # of Eligible Children
17	0%	-	0%	-
22	8%	0.0	0%	0.0
27	5%	0.0	0%	0.1
32	25%	0.1	8%	0.2
37	23%	0.2	15%	0.3
42	26%	0.3	13%	0.3
47	31%	0.3	10%	0.3
52	29%	0.2	8%	0.2
57	32%	0.1	10%	0.0
62	31%	0.1	10%	0.0
67	26%	0.1	7%	-
72	10%	0.0	4%	-
77	9%	0.0	3%	-
82	8%	0.0	2%	-
87	6%	0.0	1%	-

Appendix C - Projection Results – Alternate Scenarios

Table C.1. Projected Barbados Population, All Scenarios

Year	All Ages	0 – 15	16 – 66	67+	Age Depend. Ratio
2010	277,821	58,523 21.1%	187,698 67.6%	31,601 11.4%	0.17
			Best Estimate		
2020	283,551	51,311 18 1%	191,290 67.5%	40,949 14.4%	0.21
2030	286,970	47,627 16.6%	183,943 64.1%	55,399 19.3%	0.30
2040	285,628	45,813 16.0%	175,280 61.4%	64,535 22.6%	0.37
2050	277,593	42,719 15.4%	169,310 61.0%	65,564 23.6%	0.39
2060	266,771	40,282 15.1%	163,087 61.1%	63,402 23.8%	0.39
2070	256,303	38,378 15.0%	153,555 59.9%	64,370 25.1%	0.42
			Optimistic		
2020	285,257	52,478 18.4%	192,070 67.3%	40,708 14.3%	0.21
2030	290,316	49,667 17.1%	186,068 64.1%	54,581 18.8%	0.29
2040	292,125	48,739 16.7%	180,400 61.8%	62,986 21.6%	0.35
2050	287,725	46,803 16.3%	177,537 61.7%	63,384 22.0%	0.36
2060	281,017	45,192 16.1%	174,696 62.2%	61,128 21.8%	0.35
2070	274,927	44,037 16.0%	168,710 61.4%	62,180 22.6%	0.37
			Pessimistic		
2020	281,789	50,027 17.8%	190,533 67.6%	41,229 14.6%	0.22
2030	283,901	45,543 16.0%	181,864 64.1%	56,493 19.9%	0.31
2040	279,980	42,943 15.3%	170,232 60.8%	66,805 23.9%	0.39
2050	268,574	38,734 14.4%	161,162 60.0%	68,678 25.6%	0.43
2060	253,469	35,552 14.0%	151,487 59.8%	66,431 26.2%	0.44
2070	238,261	32,985 13.8%	138,313 58.1%	66,962 28.1%	0.48

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

Year	Cash Inflow				Cash Outflow			Surplus/ (Deficit)	Reserves	
	Contribution Income	Investment Income	Other Income	Total	Benefits	Admin & Other Expenses	Total		End of Year	# of Times Current yrs Expenditure
2009	523.3	193.6	6.1	**723.0**	398.9	28.2	**427.1**	**295.9**	**3,267**	7.6
2010	564.7	179.5	6.1	**750.2**	461.8	28.6	**490.4**	**259.8**	**3,525**	7.2
2011	541.6	239.1	6.1	**786.8**	463.1	28.0	**491.1**	**295.7**	**3,819**	7.8
2012	529.3	250.1	6.1	**785.5**	540.3	27.8	**568.1**	**217.3**	**4,036**	7.1
2013	511.0	251.0	4.6	**766.6**	497.0	28.5	**525.5**	**241.1**	**4,294**	8.2
2014	519.6	256.9	4.7	**781.1**	522.0	29.2	**551.2**	**229.9**	**4,524**	8.2
2015	547.8	248.2	4.9	**800.9**	547.4	30.0	**577.3**	**223.5**	**4,747**	8.2
2016	554.1	236.2	5.0	**795.3**	575.6	30.7	**606.3**	**189.0**	**4,936**	8.1
2017	571.4	233.0	5.1	**809.5**	609.9	31.5	**641.4**	**168.1**	**5,104**	8.0
2021	639.6	245.5	5.8	**890.8**	747.0	34.7	**781.7**	**109.1**	**5,631**	7.2
2031	812.5	252.3	7.3	**1,072.1**	1146.3	44.5	**1,190.8**	**(118.8)**	**5,670**	4.8
2041	1,024.4	109.7	9.2	**1,143.4**	1,654.9	57.0	**1,711.9**	**(568.5)**	**2,204**	1.3
2051	1,317.3	(278.7)	11.9	**1,050.5**	2,209.0	73.4	**2,282.4**	**(1,231.9)**	**(6,955)**	(3.0)
2061	1,671.7	(1,027.9)	15.0	**658.8**	2,867.2	95.0	**2,962.3**	**(2,303.4)**	**(24,517)**	(8.3)
2071	2,056.4	(2,449.0)	18.5	**(374.1)**	3,846.2	121.7	**3,967.9**	**(4,342.0)**	**(57,819)**	(14.6)

Investment income includes change in Revaluation Reserve & figures for 2012 are actual.

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

Year	Pensions, Grants & Benefits						Benefits as a % of:	
	Old Age Cont.	Invalidity	Survivors	Non-Cont. Old Age	Short-term	Emp. Injury	Insurable Wages	GDP
2011	319	50	20	19	39	6	15.4%	6.4%
2012	383	61	23	17	49	7	18.4%	6.4%
2013	357	49	23	14	48	7	17.2%	5.8%
2014	378	52	24	13	49	7	17.7%	6.0%
2015	398	55	25	11	51	7	17.8%	6.1%
2016	423	58	26	10	52	8	18.3%	6.2%
2017	452	61	27	9	53	8	18.8%	6.4%
2021	570	72	30	5	60	10	20.6%	7.0%
2031	925	92	41	0	76	12	24.9%	8.6%
2041	1,378	113	53	0	96	15	28.5%	9.9%
2051	1,858	144	65	-	123	19	29.6%	10.6%
2061	2,416	191	78	-	156	25	30.3%	11.0%
2071	3,294	230	100	-	192	30	33.0%	11.8%

Note: Figures for Old Age Non-contributory pensions are amounts for which NIS is financially obligated.

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

Year	# of Contributors	# of Pensioners					Total # of Pensioners	Ratio of Contributors to Pensioners
		Old Age Cont.	Invalidity	Survivors	Old Age Non-Cont.	Death & Disablement		
2011	121,088	23,169	3,656	2,732	4,108	339	**34,004**	**3.6**
2012	119,381	23,973	3,415	2,878	3,758	331	**34,356**	**3.5**
2013	116,490	24,834	3,568	3,010	3,419	346	**35,176**	**3.3**
2014	115,453	25,530	3,722	3,105	3,093	360	**35,811**	**3.2**
2015	116,312	26,283	3,882	3,191	2,782	374	**36,513**	**3.2**
2016	117,065	27,225	4,032	3,257	2,487	388	**37,389**	**3.1**
2017	117,718	28,124	4,163	3,306	2,208	399	**38,201**	**3.1**
2021	119,146	31,415	4,567	3,289	1,263	431	**40,965**	**2.9**
2031	116,722	39,482	4,811	3,379	96	452	**48,220**	**2.4**
2041	115,912	47,202	4,751	3,650	0	453	**56,056**	**2.1**
2051	116,344	51,047	4,804	3,645	-	457	**59,954**	**1.9**
2061	111,803	51,753	4,859	3,511	-	459	**60,582**	**1.8**
2071	102,020	52,839	4,371	3,346	-	417	**60,973**	**1.7**

Note: The number of Old Age Non-contributory pensioners shown are those for whom NIS is financially obligated.

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	Admin & Other Expenses	Total		End of Year	# of Times Current yrs Expenditure
2009	523.3	193.6	6.1	**723.0**	398.9	28.2	**427.1**	**295.9**	**3,267**	7.6
2010	564.7	179.5	6.1	**750.2**	461.8	28.6	**490.4**	**259.8**	**3,525**	7.2
2011	541.6	239.1	6.1	**786.8**	463.1	28.0	**491.1**	**295.7**	**3,819**	7.8
2012	529.3	250.1	6.1	**785.5**	540.3	27.8	**568.1**	**217.3**	**4,036**	7.1
2013	514.1	251.1	4.6	**769.9**	496.7	28.5	**525.2**	**244.6**	**4,297**	8.2
2014	528.3	257.4	4.8	**790.5**	521.7	29.2	**551.0**	**239.5**	**4,537**	8.2
2015	563.7	267.4	5.1	**836.2**	548.8	30.1	**578.9**	**257.3**	**4,794**	8.3
2016	624.8	278.6	5.6	**909.1**	580.8	32.4	**613.2**	**295.8**	**5,090**	8.3
2017	651.7	290.4	5.9	**947.9**	617.8	33.9	**651.7**	**296.2**	**5,386**	8.3
2021	760.1	345.5	6.8	**1,112.5**	757.1	39.6	**796.8**	**315.7**	**6,611**	8.3
2031	1,072.9	545.2	9.7	**1,627.8**	1,159.9	56.5	**1,216.4**	**411.4**	**10,388**	8.5
2041	1,489.2	782.3	13.4	**2,284.9**	1,724.4	79.1	**1,803.5**	**481.4**	**14,850**	8.2
2051	2,035.5	1,067.9	18.3	**3,12.7**	2,414.5	109.0	**2,523.5**	**598.2**	**20,242**	8.0
2061	2,791.3	1,436.2	25.1	**4,252.7**	3,334.1	150.7	**3,484.8**	**767.9**	**27,207**	7.8
2071	3,784.5	1,849.0	34.1	**5,667.5**	4736.7	206.1	**4,942.8**	**724.7**	**34,914**	7.1

Investment income includes change in Revaluation Reserve & figures for 2012 are actual.

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

Year	Pensions, Grants & Benefits						Benefits as a % of:	
	Old Age Cont.	Invalidity	Survivors	Non-Cont. Old Age	Short-term	Emp. Injury	Insurable Wages	GDP
2011	319	50	20	19	39	6	15.4%	6.4%
2012	383	61	23	17	49	7	18.4%	6.4%
2013	356	49	23	14	48	6	17.0%	5.8%
2014	377	52	24	13	49	7	17.4%	5.9%
2015	398	55	25	11	52	7	17.3%	5.9%
2016	423	58	26	10	56	8	17.1%	6.0%
2017	454	61	27	9	59	8	17.4%	6.1%
2021	570	73	31	5	68	10	18.3%	6.4%
2031	910	97	43	0	96	13	19.8%	7.1%
2041	1,386	130	58	0	134	17	21.3%	7.8%
2051	1,950	181	76	-	183	24	21.8%	8.0%
2061	2,690	258	101	-	251	34	21.9%	8.0%
2071	3,872	342	138	-	340	45	23.0%	8.4%

Note: Figures for Old Age Non-contributory pensions are amounts for which NIS is financially obligated.

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

Year	# of Contributors	# of Pensioners					Total # of Pensioners	Ratio of Contributors to Pensioners
		Old Age Cont.	Invalidity	Survivors	Old Age Non-Cont.	Death & Disablement		
2011	121,088	23,169	3,656	2,732	4,108	339	**34,004**	**3.6**
2012	119,379	23,965	3,414	2,881	3,747	331	**34,339**	**3.5**
2013	117,352	24,808	3,566	3,017	3,398	346	**35,135**	**3.3**
2014	117,444	25,479	3,719	3,116	3,065	360	**35,740**	**3.3**
2015	119,445	26,197	3,878	3,209	2,748	374	**36,406**	**3.3**
2016	121,380	27,093	4,028	3,283	2,449	388	**37,240**	**3.3**
2017	123,189	27,939	4,159	3,341	2,167	400	**38,006**	**3.2**
2021	128,598	30,945	4,572	3,372	1,223	433	**40,544**	**3.2**
2031	130,930	38,051	4,910	3,569	90	464	**7,084**	**2.8**
2041	133,684	44,572	4,978	3,936	0	477	**53,963**	**2.5**
2051	132,528	47,812	5,156	4,039	-	493	**57,501**	**2.3**
2061	130,124	49,281	5,321	4,030	-	506	**59,138**	**2.2**
2071	125,585	51,785	5,062	4,027	-	485	**61,360**	**2.0**

Note: The number of Old Age Non-contributory pensioners shown are those for whom NIS is financially obligated.

Appendix D - Income, Expenditure & Reserves, 2009–2011

(Expressed in Millions of $'s)

	2009	2010	2011
Income			
Contribution Income	523.3	564.7	541.6
Investment Income	204.0	195.0	213.9
Other Income	4.1	4.9	3.8
Total Income	**731.4**	**764.6**	**759.3**
Expenditure			
Benefits			
Sickness Benefit	23.9	25.3	26.2
Maternity Benefit	9.4	10.1	9.8
Maternity Grant	0.3	0.2	0.3
Funeral Benefit	1.7	2.5	2.8
Old- Age Benefit	271.6	309.8	319.0
Invalidity Benefit	43.6	49.7	49.7
Survivors Benefit	15.5	21.0	20.2
Old- Age Non-Cont Benefit	22.0	22.7	19.4
Travelling Expenses	0.1	0.1	0.1
Medical Expenses	0.5	0.7	0.6
Injury Benefit	4.8	6.3	6.2
Disablement Benefit & Grant	5.3	13.2	8.4
Death Benefit	0.3	0.2	0.3
Total Benefit Expenditure	**398.9**	**461.8**	**463.1**
Administrative Expenditure	28.2	28.6	28.0
Total Expenditure	**427.1**	**490.4**	**491.1**
Excess of Income over Expenditure	**304.3**	**274.1**	**268.2**
Change in Revaluation Reserve	(10.4)	(15.6)	25.2
Reserves at End of Year	**3,266.7**	**3,525.3**	**3,818.8**

Appendix E - Benefit Experience & Analysis

Table E.1. Sickness Benefit Experience, 2009 – 2011

Year Ended	# Claims Awarded per 1,000 insureds	Average benefit Duration (days)	Average Weekly Benefit	Cost as a % of Insurable Wages
2009	382	8.7	401.1	0.82%
2010	419	8.8	391.0	0.81%
2011	389	8.3	469.1	0.87%

Table E.2. Maternity Allowance Experience, 2009 – 2011

Year Ended	# Claims Awarded per 1,000 insureds	Average Allowance Duration (days)	Average Weekly Allowance	Cost as a % of Insurable Wages
2009	13.3	67.5	581.9	0.33%
2010	13.8	65.9	632.8	0.33%
2011	13.3	65.6	653.6	0.34%

Table E.3. Maternity Grant & Funeral Grant Experience, 2009 – 2011

Year Ended	# Births	# Grants Awarded	Cost as a % of Insurable Wages	# Deaths	# Grants Awarded	Cost as a % of Insurable Wages
2009	3439	1,754	0.33%	2402	1613	0.06%
2010	3439	1,736	0.033%	2320	1489	0.08%
2011	3182	1,650	0.34%	2048	1586	0.09%

Table E.1 Pension Expenditure As % of Insurable Wages, 2009- 2011

Pension Type	2009	2010	2011
Old Age Contributory	9.34%	9.87%	10.60%
Invalidity	1.50%	1.58%	1.65%
Survivors	0.53%	0.67%	0.67%
Non-Contributory Old Age	0.08%	0.07%	0.06%
Disablement	0.14%	0.39%	0.20%
Death	0.01%	0.01%	0.01%
Total	**12.28**	**13.25**	**13.79**
Total Pensions (millions of $'s)	357.0	415.7	414.8

Table E.2. # Pensions Awarded, 2009 – 2011

Year	Old Age Contributory	Invalidity	Survivors	Non Cont Old Age	Disablement	Death
2009	1,742	562	391	-	198	3
2010	1256	448	348	-	213	-
2011	1705	485	342	-	353	3

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