



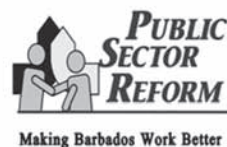
13th Actuarial Review

of the National Insurance,
Unemployment and Severance Funds
as of 31 December 2008



National Insurance Office

Frank Walcott Building
Flodden, Culloden Road
St. Michael, Barbados, W.I.



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Dr. The Hon. Esther Byer-Suckoo, M.P.
Minister of Labour & Social Security
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 13th Actuarial Review, prepared as at December 31st, 2008.

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

Yours sincerely,

K.H.L. 'Tony' Marshall
Chairman

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Abbreviations and Acronyms

CSME	CARICOM Single Market & Economy
GDP	Gross Domestic Product
IE	Insurable Earnings
LTB	Long-term Benefits
NIF	National Insurance Fund
NIS	National Insurance Scheme
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.

This is the report of the 13th Actuarial Review of National Insurance, Unemployment and Severance Funds and it is being prepared three years after the 12th Actuarial 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 National Insurance Fund is due as at December 31, 2011.

The author wishes to thank Mr. Ian Carrington, Director, Richard Nunez, Consultant Actuary and Darwin Rouse, Actuarial Analyst, and all other members of the National Insurance staff who assisted with this review.

Executive Summary

Actuarial reviews of the National Insurance Fund provide governments, workers, employers and pensioners with a comprehensive assessment of the current and projected state of Barbados' primary social security system. They also provide policy recommendations for changes designed to enhance overall system relevance and financial viability. With pension promises extending well into the future, it is important that proactive steps are taken to ensure that appropriate responses to changing socio-economic conditions are made.

This report of the 13th Actuarial Review of the National Insurance, Unemployment and Severance Funds is being prepared as the global economy appears to be rebounding at a sluggish pace from an economic crisis. Barbados was not spared. With preliminary estimates suggesting that the economy contracted by more than 5% in 2009 and unemployment increasing to over 10%, National Insurance Fund income from both contributions and investments has been negatively affected.

Although the effects of the current recession began to be felt in 2008, the National Insurance Fund (NIF) performed well during the period under review. Experience during the years 2006 to 2008 was generally favourable with 2008 year-reserves totalling \$2.9 billion at the end of 2008, 2.5% higher than projected in the 12th Actuarial Review. These positive results were due mainly to continued growth in contribution income and strong returns on investments. In 2008 some 127,000 persons made contributions and at the end of the year 34,000 were in receipt of pensions.

Most of the pension reforms made several years ago have now been fully phased in. Key among these are the automatic annual indexation of earnings ceiling and pensions, and the flexible early pension age. During recessionary times, the existence of flexible retirement ages and automatic adjustments to pensions and earnings ceiling, ensure that the National Insurance Scheme (NIS) maintains its relevance for both workers and pensioners, and that older persons who have lost their jobs can access their NIS pensions earlier than they were able to before reform.

Unemployment benefit claims provide a good indicator of labour market changes. Consistent with the economic downturn that started in 2008 unemployment benefit payments in 2008 were higher than in 2007 and exceeded contributions.

This report's assessment of National Insurance policy and design indicators suggests that current contribution and benefit provisions provide a good level of income protection to most workers and pensioners. During 2008, pensions were adjusted by more than average inflation which resulted in the minimum pension increasing from 24% to 27% of average insurable earnings. Automatic annual adjustments to earnings ceilings and pensions will ensure the ongoing maintenance of current levels of income protection.

For this report, 60-year projections have been performed on the National Insurance Fund and 10-year projections on the Unemployment Fund. Following is a summary of the key findings and observations of the demographic and financial projections described in greater detail in Chapters 3 and 4:

1. The projections of the NIF presented in this 13th Actuarial Review are more favourable than those of the 12th Review. This is due mainly to improved data on current contributors which now suggests that there were more contributors in previous years than reported when the 12th Review was conducted.

2. Without any adjustment to current contribution rates which average 18%, total expenditure will exceed contributions for the first time in 2022 and current reserves together with future contributions will be sufficient to meet future expenditure until 2067.
3. Under an alternate projection with a less favourable economic outlook, the National Insurance Fund will be depleted in the mid-2050's. However, under a more favourable assumption set, the current contribution rate would be adequate to meet expenditure for the foreseeable future.
4. Total expenditure expressed as a percentage of insurable earnings, commonly referred to as the pay-as-you-go rate, is projected to increase from 14.6% in 2009 to a relatively stationary level of just over 26% in the 2060's.
5. The average long-term cost of Fund expenditure over the next sixty years is 20.9%, 2.9% higher than the current average contribution rate.
6. The number of contributors per pensioner is projected to fall from 3.8 in 2008 to 1.7 in 2068.
7. Under all projection scenarios tested, the key financing objective of Pension Reform of having a reserve-expenditure ratio of at least 5 in 2030 is met.
8. Although the unemployment rate may continue to rise in 2010 and 2011 and unemployment benefit costs increase, the Unemployment Fund has sufficient reserves to sustain higher benefit payouts for several more years. Therefore, no change in contribution rate is recommended at this time.
9. The Severance Fund is also very well funded and the current contribution rate is adequate. Should rising unemployment benefit costs threaten the solvency of the Unemployment Fund, reserve transfers from the Severance Fund would be a better alternative to increasing the contribution rate for unemployment benefits.
10. The analysis conducted and projections of this review confirm that the National Insurance scheme operates on sound financial and actuarial bases and provides adequate levels of income protection for workers and their families.

Perhaps the greatest challenge that the National Insurance Fund will face in the coming years is the ability to find suitable investment opportunities. Already representing almost 40% of GDP, National Insurance Fund reserves are projected to grow at a faster rate than the local economy for many more years. With government borrowing heavily in the past few years and national debt now approaching 100% of GDP, the National Insurance Board should limit additional lending to government to amounts that will not allow the percentage of the Fund now held in government securities (57%) to grow any further. The ability of the National Insurance Fund to consistently meet its obligations when contributions are not sufficient to meet expenditure will depend on its ability to liquidate its various investments. Therefore, new avenues for investments, both local and foreign, that are consistent with projected cash flow needs and Fund diversification, should be sought.

Consideration should be given to offering Employment Injury benefits to self-employed persons. For many self-employed persons, coverage for work injuries may be more valuable than for other contingencies. In the few Caribbean countries that offer self-employed persons employment injury benefits, there does not appear to be any excessive claims experience. Two

specific changes that could be made to prevent possible abuse is the requirement that the self-employed person must be up-to-date with his/her contributions at the time of the accident in order to be covered for the various benefits and reduce the injury benefit rate from 90% to 60% for self-employed persons.

The National Insurance Fund remains strong. However, like other social security funds its long-term sustainability is closely linked to real economic growth, real growth in wages and the policy decisions that affect National Insurance Fund income and expenditure. While the economic outlook for next few years remains uncertain, the NIS's impressive record of collecting most of the contributions that are due and being proactive in effecting policy changes, provide assurance to Barbadians that the Fund is capable of meeting its promises for several decades without any further increases to the contribution rate.

Chapter 1

Activities & Experiences Since Last Actuarial Review

1.1 Amendments To Act & Regulations

Other than National Insurance & Social Security Orders that facilitate the annual adjustments to the earnings limit, pensions and grants, no amendments to the various National Insurance & Social Security Regulations that took effect between 2006 and 2008 materially impact future National Insurance finances. Some of the reforms enacted prior to 2006 are gradually taking effect. Two such transitions that ended during the review period are the contribution rate increases which had its final adjustment to 18.25% for private sector workers in 2006, and the reduction in the earliest age from which Old Age Contributory pensions are payable to 61 in January 2006 and to 60 in January 2007.

Since 2005, the earnings limit or ceiling, pensions in payment and all fixed dollar benefits such as funeral and maternity grants are being adjusted automatically. For the ceiling, 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. In 2008, the minimum contributory pension was increased by more than the inflation adjustment. The following table shows the recent changes to earnings limits, minimum contributory pension and pension adjustments.

Change Effective	Monthly Earnings Limit (Ceiling)	Minimum Contributory Pension (per week)	Increases To Pensions & Grants
February 2006	\$3,290	\$116	4.76%
January 2007	\$3,390	\$119	2.97%
January 2008	\$3,550	\$123	3.66%
January 2009	\$3,720	\$148	4.18%

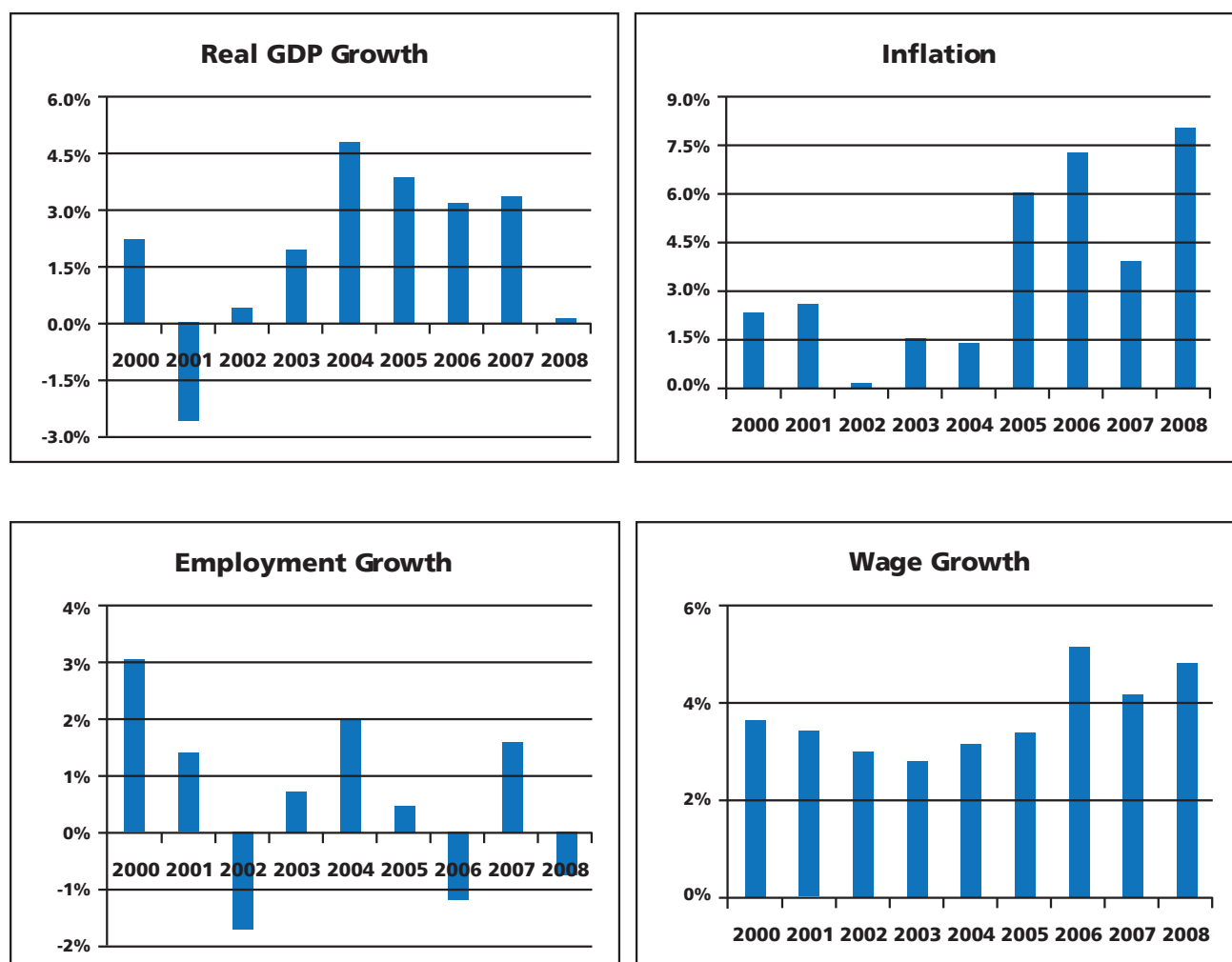
Note: In September 2008 the minimum contributory pension was increased.
Further details of all contribution and benefit provisions can be found in Appendix A.

1.2 Economic Experience

National Insurance financial performance is closely linked to economic performance and labour market changes. As shown in the four charts in Figure 1.1, GDP growth experienced a falloff in 2008 after several years of sound growth. During the period 2005 to 2008, inflation was relatively high, employment levels fluctuated and there was negative real wage growth.

Regarding employment, the average number of employed persons fell from 133,500 in 2005 to 132,200 in 2008. With the onset of the global economic crisis and the recessionary impact on Barbados, the economy contracted by more than 5% in 2009 and unemployment increased to around 10%. While the outlook for 2010 remains uncertain, a slight economic contraction and increasing unemployment are being forecast.

Figure 1.1. Key Economic Indicators Which Influence NIS Performance, 2000 to 2008



1.3 National Insurance Fund Experience

Table 1.1 below provides summary income and expenditure amounts for years 2006 to 2008. A more detailed version of the National Insurance finances for these years may be found in Appendix D. In each of the three years under review, contribution income increased as the earnings ceiling, average earnings and the number of contributors increased. While investment income increased in 2006 and 2007, it fell slightly in 2008. This was due primarily to lower interest rates, both locally and abroad, and the pressures on international markets from the initial effects of the global financial crisis.

Benefit expenditure continued to trend upwards as pension payments, which now account for 88% of total benefit payout, increased as both the average pension and the number of pensioners increases each year. In 2007, administrative costs increased by 23% over the previous year due primarily to increased depreciation charges.

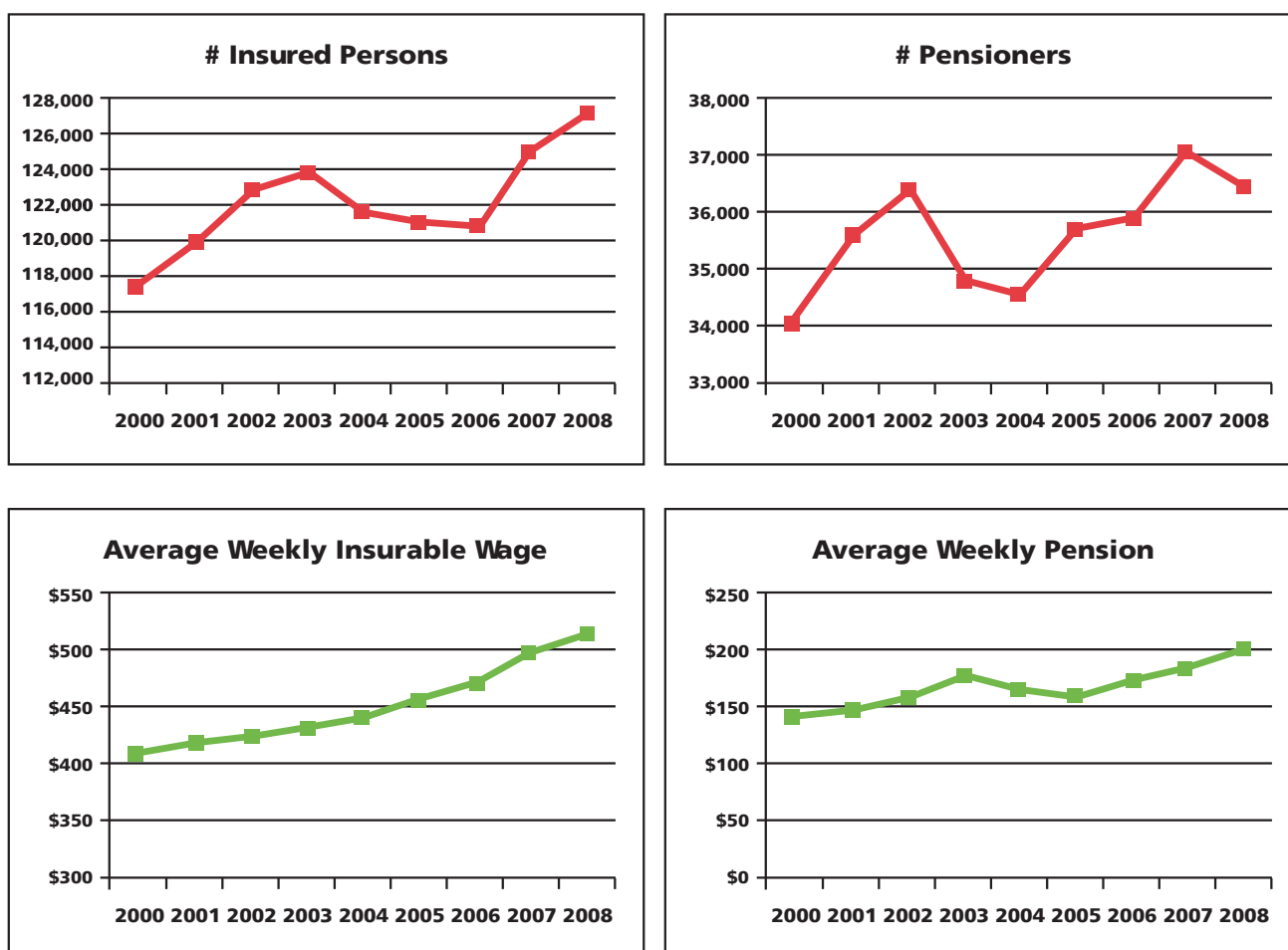
The Fund continued to generate large surpluses each year.

Table 1.1. National Insurance Fund Finances, 2006 – 2008 (millions of \$'s)

	2006	2007	2008
Income			
Contributions	452.0	471.8	527.9
Investment	144.4	165.6	165.4
Other	4.0	4.6	4.6
Total	600.4	642.0	697.9
Expenditure			
Benefits	303.9	331.4	368.9
Administrative	29.4	36.3	38.8
Total	333.3	367.6	407.7
Excess of Income over Expenditure	267.1	274.4	290.3
Benefit Reserves	2,324.3	2,618.4	2,888.7

The charts in Figure 1.2 highlight changes in the number of contributors and their average insurable earnings and the number of pensioners and the average overall pension from 2000 to 2008.

Figure 1.2. Contributors & Pensioners, 2000 to 2005



Improvements to information systems and continued data cleanup appear to have resulted in more reliable data, both current and historical, being provided for this review compared with that provided for 12th Review. For example, the number of active contributors (insured persons) shows an unusual pattern of declining in 2004 and 2005 and then increasing thereafter. With the numbers for 2007 and 2008 now considered accurate, the lower figures for previous years have been attributed to data gaps. As will be shown later, this unexpected increase in the number of current contributors has a significant impact on the long-term outlook for the Fund when compared to previous projections.

While the increase in average insurable wage is consistent with the increasing ceiling and general wage increases, fluctuations in average pension and number of pensioners are also attributed to data inconsistencies between years.

1.4 Experience Compared With Projections of 12th Actuarial Review

In the 12th Actuarial Review, dollar-value projections were presented for the entire National Insurance Fund. When compared with the Best-Estimate Scenario projections for 2006 to 2008, actual experience was generally better than projected as highlighted below.

Table 1.2. Projections of 12th Actuarial Review Compared With Actual Experience

	2006-2008 Projected (millions of \$'s)	2006-2008 Actual (millions of \$'s)	Difference
Contribution Income	\$1,384.1	\$1,451.8	4.9%
Investment Income	\$436.2	\$475.4	9.0%
Benefit Expenditure	\$987.3	\$1,004.2	1.7%
Administrative Expenditure	\$92.4	\$104.4	13.0%
2008 Year-end Reserves	\$2,819.0	\$2,888.7	2.5%
Reserve-Expenditure Ratio (2008)	7.4	7.1	(4.1%)

With economic growth being stronger than assumed for the years under review, both contribution and investment income exceeded projections. Benefit expenditure was slightly higher than expected due primarily to the unexpected adjustment of the minimum contributory pension in 2008. As indicated earlier, administrative costs increased significantly in 2007, and thus were much higher than projected.

1.5 Benefit Experience

The following tables highlight the annual cost of each benefit expressed as a percentage of insurable earnings for each of 2006 to 2008.

Table 1.3. Short-Term Benefit Expenditure As % of Insurable Wages, 2006 - 2008

Benefit	2006	2007	2008
Sickness Benefit	0.61%	0.73%	0.85%
Maternity Benefit & Grant	0.33%	0.32%	0.33%
Funeral Grant	0.08%	0.07%	0.06%
Injury Benefit	0.16%	0.17%	0.17%
Medical & Travel Expenses	0.02%	0.03%	0.03%
Disablement Grant	0.04%	0.02%	0.04%
Total	1.24%	1.34%	1.47%
Total Benefits (millions)	\$31.3	\$35.1	\$43.2

Annual insurable earnings are determined by dividing contributions collected in the year by the average contribution rate.

While most benefit expenditure items listed above were in line with recent trends, Sickness benefit expenditure increased significantly in both 2007 and 2008. This was due to increases in the number of claims approved. While the increases appear significant, annual Sickness benefit expenditure of more than 0.80% of insurable earnings has been experienced in the past. A review of the process of both claiming and adjudicating claims should be done to ensure that only legitimate claims are being approved and paid.

Table 1.4. Pension Expenditure As % of Insurable Wages, 2006 - 2008

Benefit	2006	2007	2008
Old-Age Contributory Pensions	7.8%	8.3%	8.4%
Invalidity Pensions	1.2%	1.3%	1.3%
Survivors Pensions	0.5%	0.5%	0.5%
Old-Age Non-Contr. Pensions	1.1%	1.0%	0.9%
Disablement Pensions	0.1%	0.1%	0.1%
Death Pensions	0.01%	0.01%	0.01%
Total	10.8%	11.3%	11.1%
Total Pensions (millions)	\$272.6	\$296.3	\$325.7

When expressed as a percentage of insurable earnings, the expenditure patterns are consistent with expectations. As expected, costs for Old-age Non-Contributory pensions are decreasing as the NIS only finances a fixed weekly amount to a closed group of pensioners which gets smaller each year due to deaths.

1.6 Investments

At the end of 2008, National Insurance Fund investments stood at \$2.7 billion out of the total reserve funds of \$2.9 billion. During this period the average yield on investments was 7.0%. While this is a very good rate of return on a large pool of assets, with inflation averaging 6.4%, the average annual real rate of return over the 3-year period was only 0.6%. At the end of 2008, total investments stood at 37% of national GDP.

The following table provides a summary of the National Insurance Fund investment mix at year-ends 2008 and 2005.

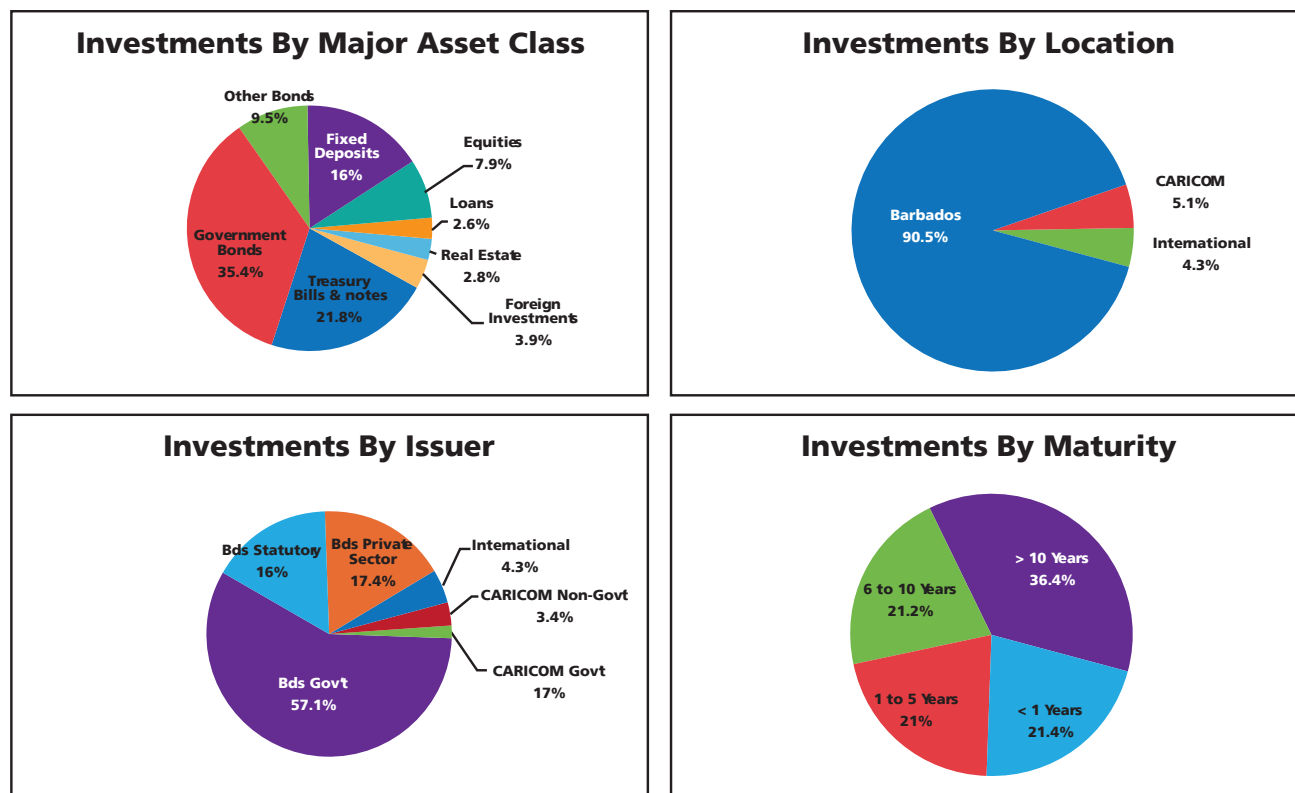
Table 1.5. Summary of Investments, Year-end 2008 & 2005 (Millions of \$'s)

Investment category	2008		2005	
	Millions of \$'s	%	Millions of \$'s	%
Treasury Bills & Notes	593.0	21.8%	269.9	14.3%
Government Bonds	960.6	35.4%	789.0	41.8%
Other Bonds	257.5	9.5%	211.9	11.2%
Fixed Deposits	435.7	16.0%	277.6	14.7%
Equities	214.6	7.9%	155.5	8.2%
Loans	71.9	2.6%	74.9	4.0%
Real estate	76.3	2.8%	33.8	1.8%
Foreign Investments	107.2	3.9%	75.0	4.0%
Total	2,716.8	100.0%	1,887.6	100.0%

The above table shows the distribution of investments by major asset class. With little change in mix between 2005 and 2008, the portfolio remains quite heavily concentrated in locally issued, fixed income, public sector securities. There is potential, therefore, for a gradual shift to increasing real estate holdings and placing a greater portion of investments overseas.

In addition to asset mix, the charts that follow illustrate investment diversification using three other criteria – by location, by maturity and by the issuer of the underlying security. This analysis confirms several areas of concentration with 90% of investments domiciled in Barbados, 73% invested in Barbados public sector securities – either Government directly or statutory bodies, and over 40% of the portfolio having maturity dates of less than 10 years.

Figure 1.3. Investment Diversification, December 2008



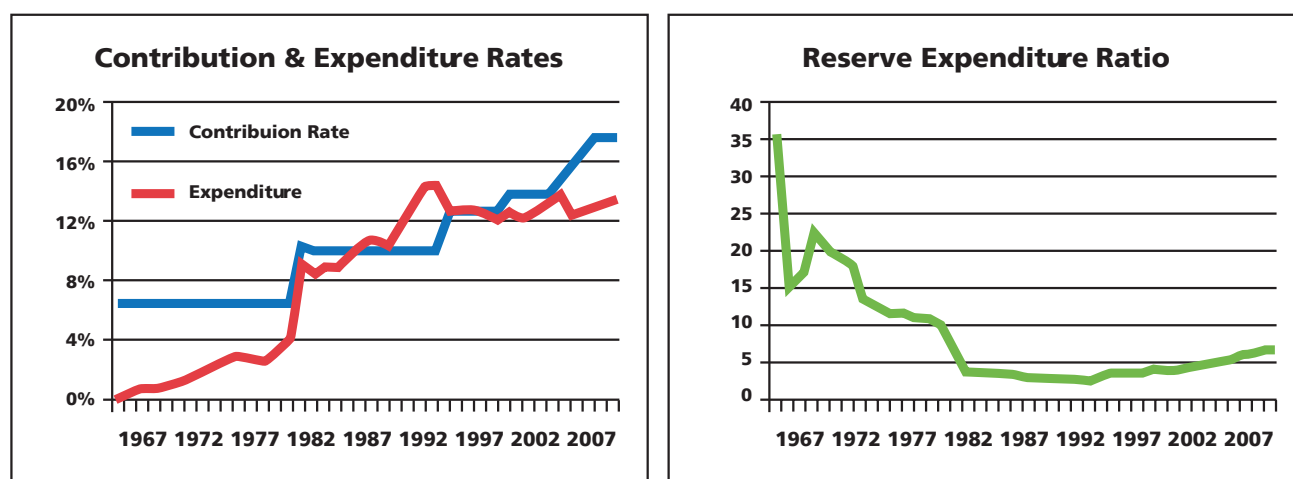
Chapter 2

Assessment Of Performance & System Design

2.1 Historical Performance, 1967 – 2008

Given the long-term nature of social security schemes an assessment of performance should not be limited to one or two review periods but instead must entail a review of experience over an extended period. The two indicators that best illustrate the growth and development of the National Insurance Fund since inception are the pay-as-you-go or expenditure rate and the reserve-expenditure ratio. The evolution of these two indicators from 1967 to 2008 is illustrated in Figure 2.1.

Figure 2.1. National Insurance Experience, 1967 to 2008



As shown above, the pay-as-you-go rate depicted by the red line, which is total Fund expenditure as a percentage of insurable earnings, has generally trended upwards indicating that expenditure has been increasing at a faster rate than insurable earnings. The pattern of increasing pay-as-you-go rates is expected to continue for many more years but at a decreasing rate. The increasing contribution rate (blue line) between 2003 and 2006 was a key outcome of pension reforms which were enacted several years ago.

As pay-you-go rates increased the gap between contributions and expenditure decreased resulting in gradual reductions in the reserve-expenditure ratio. This ratio measures the size of the Fund relative to annual payouts. With two contribution rate adjustments in the 1990's and four 1% increases from 2003 to 2006, the size of the Fund relative to annual expenditure has increased.

As a direct result of pension reform, annual surpluses have increased and the relative funding level is higher.

Following are values for several key indicators at the dates of this and the last three actuarial reviews along with a brief analysis of the changes that have occurred since 1999.

Table 2.1. National Insurance Performance Indicators

	1999	2002	2005	2008	Comments
1. Average Contribution Rate	13.9%	14.0%	16.9%	18.0%	Final rate adjustment effective January 2006.
2. Expenditure Rate (% of IE)	12.7%	13.6%	12.8%	13.9%	Unexpected fluctuations due to timing of benefit and contribution payments but general upward remains.
3. Investment Income as % of Total Income	23%	23%	23%	24%	Investment income continues to contribute significantly to Fund finances.
4. Benefits as % of GDP	4.8%	5.2%	4.9%	5.0%	Little change over time but NIS benefits still represent significant transfer of funds.
5. Reserves as % of GDP	24%	31%	33%	39%	Reserves increasing faster than economy. Could present challenges for finding suitable local investments.
6. Reserve-Expenditure Ratio	4.6	5.4	6.2	7.1	Increases consistent with recent contribution rate adjustments.
7. Administrative Expenses as a % of Insurable Wages	0.79%	0.95%	1.11%	1.32%	Relative to the total wage on which contributions are based, NIS operating costs were 67% higher in 2008 than in 1999.

Note: Total benefit payments for 2005 were revised downwards after 12th review prepared.

By partially funding future NIS benefits, the real rate of return on reserves is an important factor when determining whether or not such pre-funding is a superior financing mechanism to pay-as-you-go for the funding of NIS pensions. With pensions now automatically adjusted each year by the lower of wage and price inflation, positive long-term real rates of return on reserves have become even more critical.

Table 2.2 shows the average nominal and real rates of return on total reserves over the past 5, 10 and 20 years. For both real and nominal returns, lower yields have been realised as the period analysed is shortened. The reductions for real returns is reflective of high inflation in the last few years and low inflation in 11 years before this.

Table 2.2. Nominal & Real Yields On Reserves

Yield on Reserves	5-year Average	10-year Average	20-year Average
Nominal	6.62%	6.74%	7.13%
Real	1.22%	3.16%	3.61%

While the most recent 5-year period may be considered an exception given four years of high inflation, there is certainly a trend of declining interest rates and returns on investments which is consistent with worldwide trends.

With the exception of rising administrative costs, demographic and financial experience has been generally in line with expectations for a defined benefit, partially funded social security system that is just over 40 years old.

2.2 Design & Policy Indicators

Social security systems have wide-ranging objectives such as the provision of adequate income coverage for all workers which lead to the provision of adequate lifetime pensions for the retired, invalid and survivors of insured persons. Given that the Barbados National Insurance system has a large pool of assets which together with future contributions will meet future expenditure, ensuring that these assets realise market rates of return without exposure to excessive risk is also an important objective.

While assessing whether or not these objectives are being met can be difficult to objectively assess, by setting the rates for certain key parameters such as the earnings ceiling and minimum pension, or through policy guidance issued to the National Insurance Board, policymakers influence to a large extent how well such objectives are achieved. The following table provides an analysis of the development of key design parameters and indicators of coverage, benefit levels and investment prudence, by reviewing current levels and changes between 1999 and 2008.

Table 2.3. Assessment of Key Design Parameters & Achievement of Policy Objectives

Policy	Measured By	1999	2002	2005	2008	Comments
1. Level of Insurance Coverage	Ratio of Ceiling to Average Insurable Wage	1.8	1.7	1.6	1.6	Ratio not expected to change as ceiling now being adjusted annually with changes in average wages.
2. Minimum Floor of Income Protection	Minimum Age Pension as a% of Average Insurable Wage	25%	25%	24%	27%	Adjustment in excess of inflation made in 2008. Annual indexation will maintain current replacement rate.
3. Coverage For All Employed Persons	# of Active insureds as % of # of Employed Persons	92%	94%	91%	96%	Very good. Since one job may be filled by more than one NIS contributor over the course of a year, these rates do not indicate that only fewer than 10% of the workforce (4% in 2008) did not contribute.
4. Investment Diversification	% of Assets held in Government of Barbados securities.	69%	61%	54%	57%	With an additional 16% invested in statutory body instruments, public sector exposure is high.
	% of Assets held in short-term deposits	14%	12%	15%	16%	High. Positive cash flow expected for many more years thus long-term investments should be sought.
	% of Assets held locally	96%	91%	90%	91%	High. With Fund being so large relative to economy, greater portion should be invested outside Barbados.

Chapter 3

Best-Estimate Projections

Many demographic and economic factors, such as changes in the size and age structure of the population, economic growth, employment, wage levels and inflation influence National Insurance finances. Therefore, to best estimate the NIF's long-term sustainability, projections of Barbados' total population and the economy are required. For this review 60-year projections have been performed.

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." However, 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 either more optimistic or more pessimistic than best-estimate assumptions, are presented in Chapter 4.

3.1 Population Projections

3.1.1 Assumptions

Projections of the Barbados population begin with the results of the 2000 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, deaths are expected to occur. 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 2000 population census placed Barbados' population at 268,792.

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. The fertility and migration assumptions have used as a base those of the Barbados Statistical Service June 2005 Population Projections. However, additional inward migration arising from the CSME, and expected labour shortages in Barbados, have been factored in.

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. The Barbados TFR is estimated at just over 1.8, showing slight increases in recent years. For this set of projections it is assumed that the TFR will experience further increases to 1.9 in 2025, remaining constant thereafter.

Current population estimates and the number of deaths in the past few years, suggest life expectancy at birth in 2008 of around 74.6 for males and 80.2 for females. At age 65, assumed life expectancies for males and females are 17.3 and 20.6, respectively. Further improvements in life expectancy are expected and are assumed to occur in accordance with UN estimates.

The medium and long-term economic assumptions used for this report assume stable and positive economic growth and labour productivity. 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. Further details may be found in Appendix B.

Table 3.1. Principal Demographic & Economic Assumptions

Ultimate Total Fertility Rate (from 1.8 in 2000)		1.9
Mortality Improvements[^]		Slow
Net In-Migration Per Annum[*]		100 p.a. between 2000 and 2010 increasing to 200 p.a. in 2020, increasing further to 300 p.a. in 2035, remaining constant thereafter.
Real GDP Growth Rates^{**}	2009 to 2014	-5.3%, 0%, 3.0%, 2.5%, 2.5%, 2.5%
	2015 to 2019	2.5% declining linearly to 1.5%
	2020 to 2029	1.5%
	2030 to 2039	1.25%
	2040+	1.0%
Labour Productivity Increases (p.a.)		1.1% after 2011
Long-term Inflation (p.a.)		2.5%

[^] UN mortality improvement rates

^{*} 75% of the number of net inward movements are persons above working age representing returning nationals.

^{**} GDP Growth rates & inflation for 2009 to 2014 taken from IMF baseline estimates

These assumptions differ slightly from those used in the 12th Actuarial Review. Using actual births and deaths from 2001 to 2008, the sex ratio of newborns was revised and life expectancies at birth in 2000 were revised upwards to account for fewer deaths than projected in the 12th Review. Given the current economic crisis, short-term GDP growth estimates have been adjusted downwards, IMF inflation and growth assumptions up to 2014 have been adopted, and long-term real economic growth assumptions are slightly lower.

3.1.2 Projection Results

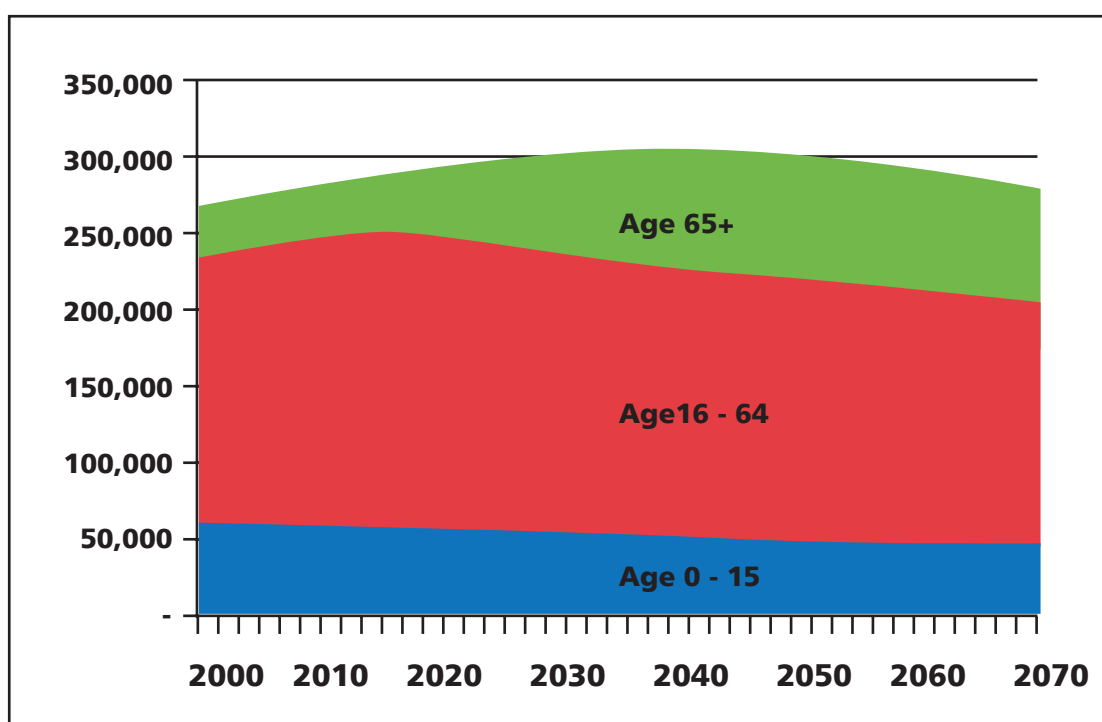
From the 2000 Census population of 268,792, the Barbados population is projected to increase to just under 304,000 in the mid-2030's before declining to just under 280,000 in 2070. While the projected size of the population is important, the age distribution of the population is more critical for NIS, as pensions to the elderly represent the bulk of expenditure. For the projections under these best-estimate assumptions, the anticipated ageing pattern is highlighted in the last column of Table 3.2 which shows that the ratio of the number of pension age persons to working age persons in the population is projected to decrease from 5.4 to 2.1.

The projected changes in population size and age structures of the Barbados population are also illustrated in Figure 3.1.

Table 3.2. Projected Barbados Population (Best-Estimate Scenario)

Year	Total	Age 0 – 15	Age 16 – 64	Age 65 & Over	Ratio of Persons 16 – 64 to 65 & Over
2000	268,792	61,948	174,323	32,521	5.4
2005	276,412	60,394	182,122	33,896	5.4
2010	283,357	58,442	189,591	35,324	5.4
2015	289,656	57,608	191,970	40,078	4.8
2020	295,060	56,840	191,206	47,014	4.1
2025	299,439	56,075	187,304	56,061	3.3
2030	302,432	55,144	182,347	64,941	2.8
2035	303,724	54,047	178,912	70,765	2.5
2045	300,790	51,857	172,992	75,941	2.3
2055	292,633	50,083	166,321	76,229	2.2
2065	283,557	48,256	160,331	74,970	2.1
2070	279,307	47,345	157,696	74,265	2.1

Figure 3.1. Population Age Structure, 2000 & 2070 - Best Estimate Scenario



3.2 National Insurance Fund Projections

Building on the population and economic projections presented in the previous section, National Insurance demographic and financial projections have been modelled under best-estimate assumptions. These projections encompass several National Insurance specific assumptions and the contribution and benefit provisions in place on January 1, 2009, with provisions made for known adjustments after that date.

3.2.1 Assumptions

Key National Insurance financial assumptions are shown below.

Table 3.3. National Insurance Best Estimate Assumptions

Average Contribution Rate	18% in all years
Insurable Wage Ceiling	Increases annually by the change in average wages
Short-term Benefits	Increases from 1.38% to 1.5% of insurable earnings over 60 years
Pension Increases	Annually by the lower of the 3-year average change in wages or prices
Long-term Yield on Reserves	5.5% (3% above inflation)
Other Income	0.9% of insurable earnings
Administrative Expenses as a % of Insurable Wages	Decrease from 1.3% to 0.8% over 60 years subject to annual increases of at least 2.5%.

Note: Short-term benefits includes non-pension Employment Injury benefits

3.2.2 Projection Results

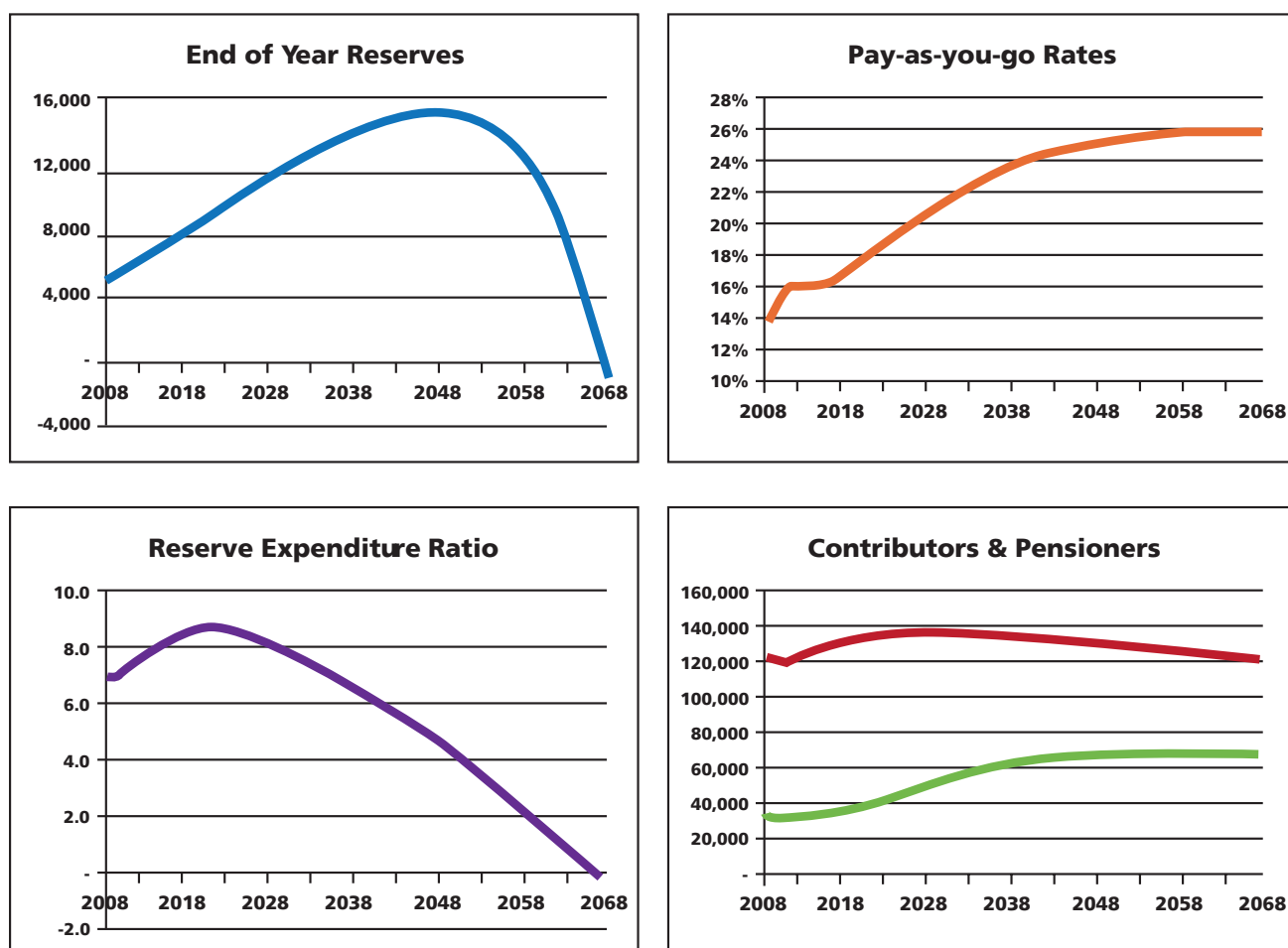
The results of the 60-year projections of the National Insurance Fund in this 13th Review are more favourable than those of the 12th Review. The differences in outlook are due primarily to current data indicating more current contributors than previously reported.

Key findings and observations are summarised below and illustrated in the four charts of Figure 3.2. All observations are based on there being no changes to the current contribution rate and legislated contribution and benefit provisions.

- (a) National Insurance Fund reserves are projected to grow from \$2.9 billion at the end of 2008 to \$11.1 billion in 2030, and to just over \$15 billion in the late 2040's. Reserves are projected to be exhausted in 2068.
- (b) Contributions at current rates will be sufficient to cover all expenditures up to 2022. Thereafter, an increasing portion of investment income will be required to make up the shortfall.
- (c) With reserves continuing to grow, investment income will represent a growing portion of total income increasing from 25% in 2009 to 33% in the late 2020's.
- (d) Although assets are projected to increase more than seven-fold, the size of reserves relative to annual expenditure (reserve-expenditure ratio) will peak in 2020 at around 8.9 and decline gradually thereafter.

- (e) NIF Reserves will grow at a faster rate than the economy increasing from 44% of GDP in 2009 to around 67% in the late 2020's.
- (f) Annual expenditure relative to total insurable wages, commonly referred to as the pay-as-you-go rate, is projected to increase gradually from 14.6% in 2009 to a relatively stable rate of just over 26% towards the end of the projection period.
- (g) The general average premium, or the level contribution rate required to cover expenditure during the next 60 years if there were no assets is 20.9%, 2.9% higher than the current average contribution rate.
- (h) The number of contributors is expected to increase slightly over the next 30 years but return to current levels of around 127,000 at the end of the projection period. The number of pensioners, however, will more than double to around 72,500.
- (i) The ratio of the number of contributors to the number of pensioners is expected to fall from 3.8 in 2008 to 1.7 in 2068.

Figure 3.2. Projection Results – Best Estimate Scenario



The policy objective of the pension reforms made in 2002 was a target reserve-expenditure ratio of 5.0 in 2030. For the Best Estimate scenario, this target is met as the projected reserve-expenditure ratio in 2030 is 8.0.

Numerical details of the financial and demographic projections for the Best Estimate scenario are provided in Tables 3.4 to 3.6.

Table 3.4. Projected Income, Expenditure & Reserves - Best Estimate (millions of \$'s)

Year	Cash Inflows				Cash Outflows			Reserves		
	Contribution Income	Investment Income	Other Income	Total	Benefits	Admin & Other Expenses	Total	Surplus/ (Deficit)	End of Year	Revise # of Times Current Year's Expenditure
2006	452.0	144.4	4.0	600.4	303.9	29.4	333.3	267.1	2,324	7.0
2007	471.8	165.6	4.6	642.0	331.4	36.3	367.6	274.4	2,618	7.1
2008	527.9	165.4	4.6	697.9	368.9	38.8	407.7	290.3	2,889	7.1
2009	544.4	183.9	4.9	733.3	402.8	39.3	442.2	291.1	3,180	7.2
2010	548.9	199.9	4.9	753.7	427.0	40.3	467.3	286.3	3,466	7.4
2011	564.3	213.8	5.1	783.3	450.5	41.3	491.8	291.5	3,758	7.6
2012	579.9	227.5	5.2	812.6	475.0	42.3	517.3	295.3	4,053	7.8
2013	609.3	241.3	5.5	856.1	498.2	43.4	541.6	314.6	4,367	8.1
2014	639.3	255.6	5.8	900.7	523.3	44.7	567.9	332.7	4,700	8.3
2018	762.2	319.3	6.9	1,088.4	651.5	51.8	703.3	385.1	6,157	8.8
2028	1,109.2	541.7	10.0	1,660.9	1,181.4	70.2	1,251.5	409.3	10,322	8.2
2038	1,596.5	731.6	14.4	2,342.4	1,969.7	93.5	2,063.2	279.2	13,801	6.7
2048	2,235.2	804.9	20.1	3,060.2	2,964.3	120.7	3,085.0	(24.8)	15,015	4.9
2058	3,088.8	634.8	27.8	3,751.3	4,276.0	154.5	4,430.5	(679.1)	11,505	2.6
2068	4,292.2	(36.8)	38.6	4,294.0	6,037.1	197.8	6,234.8	(1,940.8)	(1,651)	(0.3)

Table 3.5. Projected Benefit Expenditure - Best Estimate (millions of \$'s)

Year	Pensions, Grants & Benefits						Benefit as a % of:	
	Old Age Cont.	Invalidity	Survivors	Non- Cont. Old Age	Short-Term	Emp-Injury	Insurable Wages	GDP
2008	245	38	14	25	36	4	12.6%	5.0%
2009	277	43	15	22	42	4	13.3%	5.6%
2010	296	46	17	20	42	5	14.0%	5.9%
2011	315	50	19	18	43	5	14.4%	6.0%
2012	335	53	20	17	45	5	14.7%	6.0%
2013	354	55	21	15	47	6	14.7%	6.0%
2014	373	59	22	14	49	6	14.7%	6.0%
2018	475	73	28	8	59	8	15.4%	6.3%
2028	928	108	45	1	87	11	19.2%	7.6%
2038	1,606	150	70	0	128	16	22.2%	8.8%
2048	2,441	217	102	-	181	23	23.9%	9.3%
2058	3,550	297	144	-	254	31	24.9%	9.5%
2068	5,024	414	197	-	358	44	25.3%	9.5%

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

Table 3.6. Projected Contributors & Pensioners at Year-end - Best Estimate

Year	# of Contributors	# of Pensioners					Total # of Pensioners	Ratio of Contributors to Pensioners
		Old Age Cont.	Invalidity	Survivors	Old Age Non-Cont.	Death & Disablement		
2008	127,190	21,076	3,184	2,906	5,963	502	33,631	3.8
2009	126,009	22,076	3,197	2,978	5,478	561	34,290	3.7
2010	124,569	22,735	3,374	3,097	5,010	591	34,808	3.6
2011	126,898	23,332	3,546	3,225	4,565	621	35,288	3.6
2012	128,818	24,217	3,710	3,350	4,139	649	36,066	3.6
2013	130,703	25,122	3,870	3,461	3,733	676	36,863	3.5
2014	132,689	25,817	4,039	3,556	3,347	705	37,463	3.5
2018	137,949	29,433	4,610	3,723	2,018	798	40,583	3.4
2028	142,529	43,854	5,156	4,231	259	894	54,394	2.6
2038	139,708	55,861	5,227	4,883	1	917	66,889	2.1
2048	136,435	60,769	5,274	5,152	-	930	72,126	1.9
2058	131,961	62,526	5,036	5,095	-	892	73,549	1.8
2068	127,433	62,750	4,894	4,894	-	865	73,404	1.7

3.3 Comparison With Results Of 12th Actuarial Review

The projection results presented above differ in several ways from those of the 12th Actuarial Review. Firstly, population projections, while similar in total, suggest a slightly older population due to an increase in current life expectancies. The change in assumed mortality rates was based on the actual number of deaths between the last census in 2000 and 2008. However, a declining total population starting in the late 2030's is still projected. Given the long-term nature of these projections, reduced economic growth estimates for the next few years has little long-term effect on these projections.

For National Insurance projections, improved data has resulted in an increase in the reported number of current contributors. While the introduction of additional insured persons to the projections will lead to additional pensioners in the future, the impact of more contributors throughout the projection period leads to a larger wage base and thus lower pay-as-you-go rates. As a result, the projections of the 13th Actuarial Review present a slightly more positive outlook for the National Insurance Fund than those of the 12th Actuarial Review.

3.4 Sensitivity Analysis

There is much uncertainty inherent in the population, economic and National Insurance projections that extend 60 years. Since greatest concern is related to the risk factors that could hasten depletion of the Fund, the potential variability related to different assumptions for these economic factors have been modelled. In each case, only one assumption is changed so that the impact of differences in outcome for that one risk factor can be determined. In the following chapter, two alternate projection sets that encompass demographic assumptions that are more optimistic and more pessimistic than those of the Best Estimate scenario are presented.

The two factors that are likely to have greatest impact on overall future finances are the yield on reserves and the difference between the rate of growth of wages and inflation - real wage growth. If either is lower than expected, NIF finances will be negatively affected as illustrated in the following table. To model the effect of lower real wage growth, the inflation rate or the rate at which benefits are assumed to increase annually is adjusted without any change to wage growth.

Table 3.7. Sensitivity Tests – Best Estimate

Assumption	Scenario	Reserve- Exp. Ratio in 2030	General Average Premium	PAYG Rate in 2030	Year Fund Exhausted
	Best Estimate	7.9	20.9%	21.1%	2068
Long-term Yield on Reserves	½% lower (5.0%)	7.3	21.2%	21.1%	2062
	1% lower (4.5%)	6.8	21.5%	21.1%	2058
Benefit Increases (Price Inflation)	½% higher	7.1	21.8%	22.0%	2058

While the lower yields on investments and higher pension increases will result in increased costs and lower reserve levels, the target reserve-expenditure ratio of 5 in 2030 is not threatened by single changes to these assumptions.

Chapter 4

Alternate Projection Scenarios

Best Estimate projections up to 2068 presented in the previous chapter provide estimates of future National Insurance 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.

The two alternative projection sets encompass assumptions that are generally more optimistic and more pessimistic than those of the Best Estimate projections. However, since National Insurance long-term financial sustainability will likely be more sensitive to future demographic changes than future economic changes, the basis for the alternative scenarios focus on differences in the projected dependency ratio (population 65 and over to population 16 to 64) or ratio of retirement-age persons to working-age persons. The scenario which may be considered more optimistic will have fewer retirees per worker and thus is referred to as the Low Dependency scenario. Conversely, the more pessimistic scenario will have a larger number of retirees per worker and will be referred to as the High Dependency scenario. The economic outlook has also been adjusted to reflect the effects of different population sizes and structures.

It should be noted that these alternative scenarios do not seek to model the variability of near-term outcomes.

Following is a summary of the key assumptions that vary between the three projection scenarios. The values for all other assumptions are similar across scenarios.

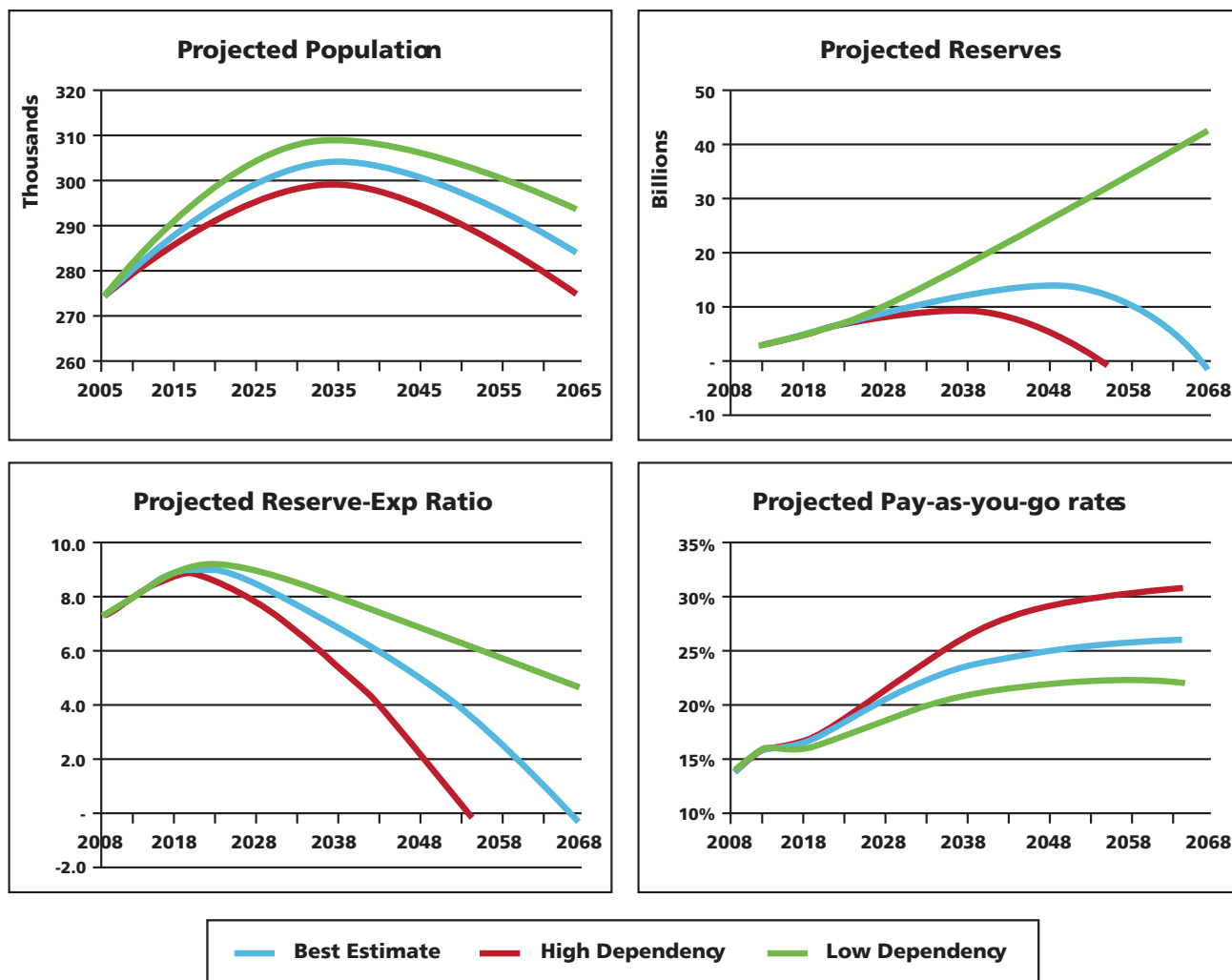
Table 4.1. Principal Demographic & Economic Assumptions

	Low Dependency	Best Estimate	High Dependency
Ultimate Total Fertility Rate (from 1.8 in 2000)	2.0	1.9	1.8
Mortality Improvements[^]	Very Slow	Slow	Medium
Net Migration Per Annum (In less out)	300% of Best Estimate	100 p.a. between 2000 and 2010 increasing to 200 p.a. in 2020, increasing further to 300 p.a. in 2035, remaining constant thereafter.	25% of Best estimate
Labour Productivity Increases	1.5%	1.2%	0.8%
Inflation & Pension Adjustments	3.0%	2.5%	2.0%
Long-term Yield on Reserves	6.0%	5.5%	5.0%

[^] UN mortality improvement rates. Very Slow rates are midpoint of Slow and no improvements.

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 economic performance.

Figure 4.1. Projection Results – All Scenarios



Under the Low Dependency scenario that assumes a larger population, higher real wage growth and higher rates of return on assets, reserves grow throughout the projection period. Under such a scenario, therefore, the current contribution rate appears more than adequate to meet National Insurance expenditure for the indefinite future. Under the High Dependency Scenario, however, reserves could be depleted 13 years prior to Best Estimate projections and pay-as-you-go costs could exceed 30% of insurable wages.

The following table provides a comparison of key results under all three scenarios.

Table 4.2 Summary Results – All Scenarios

	Low Dependency	Best Estimate	High Dependency
Expenditure First Exceeds Contributions	2026	2023	2021
Expenditure First Exceeds Total Income	Not before 2068	2048	2036
Reserves Depleted	Not before 2068	2068	2055
General Average Premium	19.5%	20.9%	22.5%
Reserve-Expenditure in 2030	8.6	8.0	7.2
Pay-as-you-go rate in 2038	19.5%	21.1%	22.9%
Pay-as-you-go rate in 2068	22.6%	26.1%	30.7%
# of Contributors per pensioner - 2068	1.9	1.7	1.6

As seen above, the target funding ratio of at least 5.0 in 2030 as established following pension reform is expected to be met under all three projection scenarios.

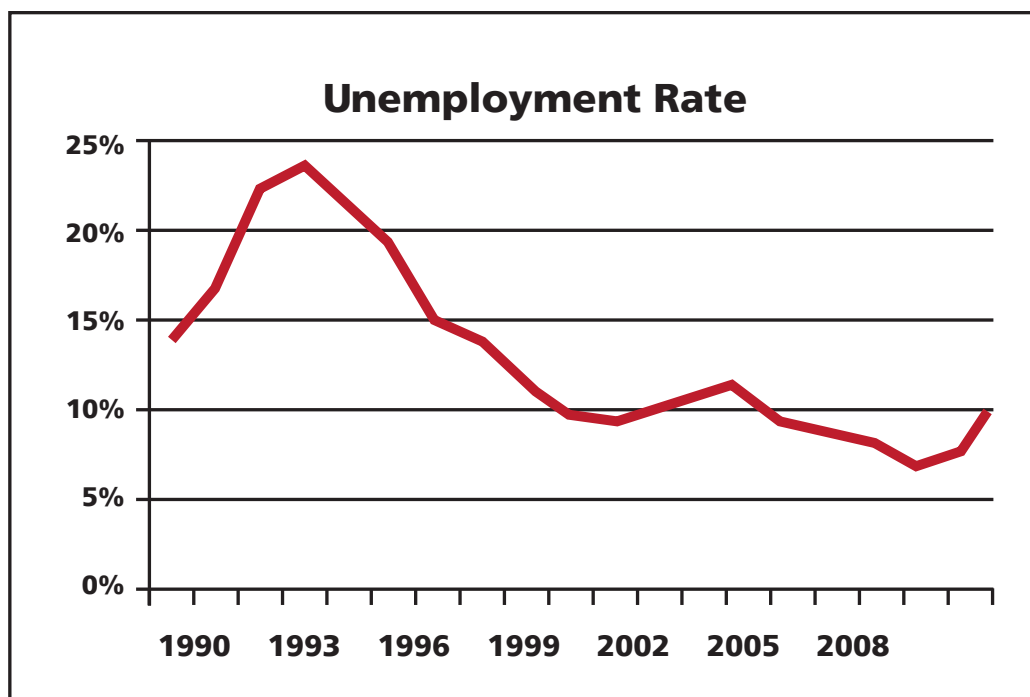
Chapter 5

Unemployment & Severance Funds

Unemployment benefits and Severance payments are administered by the National Insurance Scheme but are paid from two separate funds - the Unemployment Fund and the Severance Payments Fund, respectively. Analysis of recent experience of both Funds are discussed together as the experience of both Funds is related to changes in employment levels and overall economic performance.

The following chart shows the national unemployment rate from 1990 to 2009. The 2009 rate (10.2%) is the average of the rates for the first three quarterly Labour Force Surveys conducted in 2009. Consistent with the global economic crisis and the recession in Barbados, unemployment rates began to trend upwards in 2008.

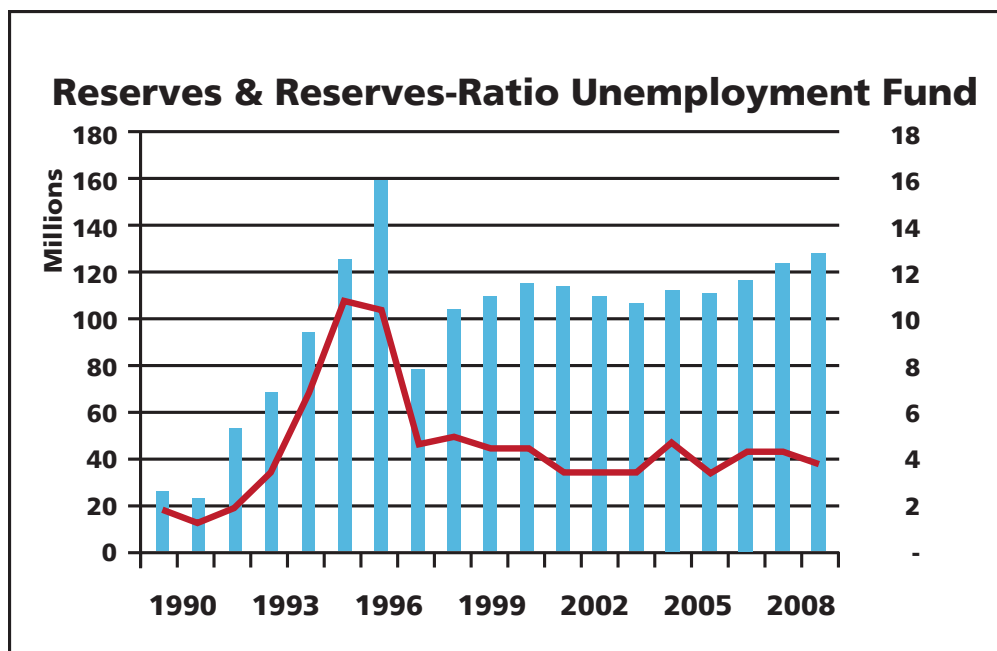
Figure 5.1 Barbados Unemployment Rate



5.1 Unemployment Fund

The Unemployment 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 1.5% since 1998. From 1993 to 1998, higher contribution rates led to contribution income exceeding benefit expenditure by significant margins resulting in the growth of the Unemployment Fund. Even after transfers to the National Insurance Fund in 1997 and benefit expenditure closely matching the 1.5% contribution rate for many years, reserves continued to grow and at the end of 2008, stood at \$127.8 million, up from \$109.8 million at the end of 2005. (Blue bars in Figure 5.2 below)

Figure 5.2. Unemployment Fund Reserves & Reserve-Expenditure Ratio



A good indicator of the adequacy of reserves to meet future expenditure is the ratio of reserves to annual expenditure, commonly referred to as the Reserve-Expenditure Ratio. The trend of this ratio from 1990 to 2008 is depicted by the red line using the right axis on the above chart. Since 1997, this ratio has fluctuated within a narrow range around 4.

The following table highlights Fund experience for years 2006 to 2008. Details of unemployment benefit provisions may be found in Appendix A and actual income and expenditure amounts may be found in Appendix E.

Table 5.1. Unemployment Fund Experience, 2006 to 2008

	2006	2007	2008
Contribution Rate	1.50%	1.50%	1.50%
Benefit Rate (as % of IE)	1.40%	1.41%	1.53%
Admin Costs (as % of IE)	0.10%	0.10%	0.09%
Yield on Reserves	5.5%	6.0%	5.9%
Surplus/(Deficit) (in millions)	\$6.3	\$7.1	\$4.7
Year-end Reserves (in millions)	\$116.0	\$123.1	\$127.8
Reserve-expenditure ratio	4.4	4.2	3.7

While combined benefit and administrative costs matched contribution income in 2006 and 2007, benefit costs exceeded contributions collected in 2008. However, the Fund continued to generate surpluses each year given the income earned on invested assets.

Due to the economic downturn unemployment benefit costs for the first 10 months of 2009 were 2.1% of insurable wages, well above the 1.5% contribution rate. With negative GDP growth forecast for 2010, benefit expenditure will likely exceed contribution income for a few more years.

Rising unemployment benefits costs during recessions is to be expected as both the number of benefits awarded and the average duration of benefit payments increases. To date no changes to unemployment benefit provisions have been made but it is not uncommon in times of recession for governments to temporarily extend unemployment benefit payments beyond the maximum period provided for in the law.

To determine the adequacy of the current contribution rate and reserve funds to support benefit expenditure that exceeds the current contribution rate for several years, and the added costs of any extension to benefit payments, 10-year projections of the Unemployment Fund for three scenarios have been performed. These scenarios and the projection results are summarised below.

Table 5.2 Short-term Unemployment Fund Projections

Scenario	Benefit Expenditure	Reserves in 2018	Reserve-Exp. Ratio in 2018
1	3.5% in 2010 and 2011, 2.5% for next 2 years, 1.5% thereafter	-\$35 million	-0.8
2	2.7% in 2010 and 2011, 2.5% in 2012, 2.0% in 2013, 1.5% thereafter	\$32 million	0.7
3	2.5% for 3 years, 2.0% in 2013, 1.5% thereafter	\$46 million	1.0

Note: Projections assume investment yield of 5.5% and administrative costs of 0.1% of insurable earnings and a 4% annual increase in insurable earnings.

If the benefit period is temporarily extended beyond 26 weeks there would be a sharp increase in expenditure such as illustrated in Scenario 1. This Scenario shows two years of expenditure at 3.5% for two years, 2.5% for the next two years before returning to levels experienced prior to the recession. Under such a scenario Unemployment Fund reserves would be depleted in 2013. Under the two other less extreme but plausible scenarios, however, projected reserves in 2018 would be adequate and remain close to the suggested target of 1 year's worth of expenditure.

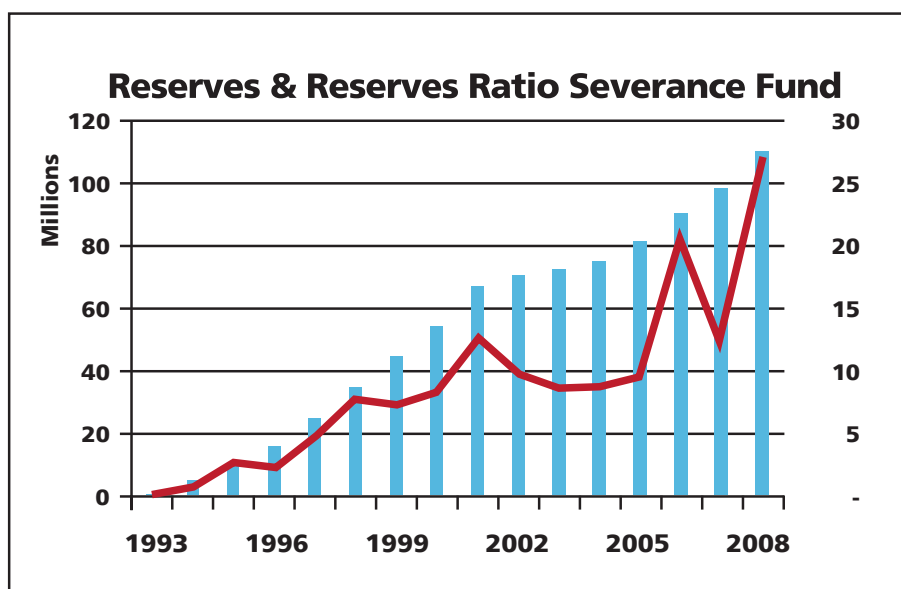
Given these projections, Unemployment Fund reserves of over 3 times annual expenditure in 2008, (projected to fall to 2.6 at the end of 2009) together with contributions of 1.5% of insurable earnings, should be sufficient to sustain higher benefit costs for the next few years. Therefore, no change to the contribution rate is recommended at this time.

5.2 Severance Fund

The Severance Payments Scheme 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. Further details of eligibility conditions and rates of payment can be found in Appendix A.

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. With annual surpluses in all years since 1995, the Severance Fund reserves have increased each year reaching \$110 million at the end of 2008. (blue bars in Figure 5.3) Since Severance payments are more volatile than Unemployment benefits, the reserve-expenditure ratio for the Severance Fund fluctuates more and given the low expenditure in 2008, this ratio stood at 27 at the end of 2008. (red line in Figure 5.3)

Figure 5.3. Severance Fund - Reserves & Reserve-Expenditure Ratio



The following table highlights Fund experience during the 3-year inter-valuation period. Actual income and expenditure amounts may be found in Appendix F.

Table 5.2. Severance Fund Experience, 2006 to 2008

	2006	2007	2008
Contribution Rate	0.50%	0.50%	0.50%
Payments Rate (as % of IE)	0.22%	0.42%	0.18%
Admin. Costs (as % of IE)	0.04%	0.03%	0.03%
Yield on Reserves	5.1%	6.0%	5.6%
Surplus/(Deficit) (in millions)	\$9.6	\$7.2	\$11.9
Year-end Reserves (in millions)	\$91.7	\$98.9	\$110.8
Reserve-expenditure ratio	20.6	11.9	27.2

After four years (2002 to 2005) of Severance Fund expenditure exceeding contribution income, expenditure costs were extremely low in 2006 and 2008. In all three years, the Fund generated significant surpluses and at the end of 2008 Severance Fund reserves were more than 13 times the highest annual expenditure total in the last five years.

For the first ten months of 2009, Severance Fund expenditure is higher than for the same period in 2008. However, expenditure remains well below the 0.5% contribution rate. Given that payments made out of this Fund are related to layoffs and business closures, it would not be surprising if expenditure increases in 2010 and fluctuates in the next few years. With the significant level of reserves, the Severance Fund is very well funded and no change to the contribution rate is recommended.

Chapter 6

Sugar Workers' Provident Fund

The Sugar Workers' Provident Fund Scheme provides for the payment of pensions to entitled former sugar workers and a funeral grant to their beneficiaries. Pensions are payable after having attained age 65 or following permanent disability before age 65 once the eligibility conditions are met. The National Insurance Board's role is limited to the Scheme's administration, having had this responsibility transferred from the Sugar Workers' Provident Fund Board in January 1976.

The weekly pension amount is \$7.50 and the funeral grant is now \$500, having been increased from \$200 effective January 1, 1999. The weekly pension amount has not been increased since April 1981.

The group of pensioners is a closed one and as at December 2008 was distributed as follows:

Table 6.1. Pensioners of the Sugar Workers' Provident Fund at December 31, 2008

Age Group	Female	Male	Total
Under 70	1	1	2
70 – 74	2	0	2
75 – 79	14	2	16
80 – 84	13	2	15
85 – 89	25	3	28
90 – 94	17	4	21
95 – 99	8	6	14
100 – 104	2	2	4
Total	82	20	102

The Fund balance at December 31, 2008 was \$57,151. Income to the Fund is received by way of payments from the Barbados Agricultural Management Company along with interest on any cash balances. Charges to the fund are the sum of expenditure for pensions, grants and administration.

Projections of total expenditure for the Sugar Workers' Provident Fund Scheme are shown below. Administrative expenses are assumed to be \$20,000 per year.

Table 6.2. Projected Expenditure of the Sugar Workers' Provident Fund

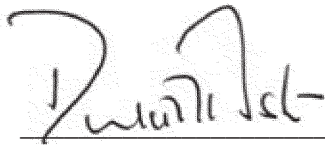
2009	2010	2011	2012-16	2017-21	2022-26	2027-31	2032-36
\$58,000	\$54,000	\$49,000	\$199,000	\$147,000	\$119,000	\$107,000	\$102,000

Statement of Actuarial Opinion

It is my opinion that for this report of the 13th Actuarial Review of the Barbados 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 *International Actuarial Association Guidelines of Actuarial Practice For Social Security Programs*.



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Severance Fund Annual Reports, 2006 to 2008
Sugar Workers Provident Fund Annual Report, 2008
Unemployment Fund Annual Reports, 2006 to 2008

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 less than \$21 or \$91 per month, no contributions are payable. Earnings include basic salary and all other remuneration in cash or kind such as bonuses.

The monthly ceiling on insurable wages has increased since 1967 as follows:

	Weekly	Monthly
1967 to 1973	\$ 50	
1974 to 1977	100	
1978 to 1981	230	\$1,000
1982 to 1984	506	\$2,200
1984 to 1986	598	\$2,600
1987 to 1991	600	\$2,600
1991 to 2004	715	\$3,100
2005	736	\$3,190
2006	759	\$3,290
2007	782	\$3,390
2008	819	\$3,550
2009	858	\$3,720

Starting 2005 the earnings ceiling has been indexed annually in line with changes in average wages.

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 2009 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.

<i>Age Requirement:</i>	<p>Full Pension: Normal pension age: 65½ in 2009, 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.</p> <p>Reduced Pension: 60 to normal pension age. This pension is dependent on retirement from the workforce.</p> <p>Increased pension: From normal pension age to age 70.</p>
<i>Amount Of Benefit:</i>	<p>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.</p> <p>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.</p> <p>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.</p>
<i>Maximum Pension:</i>	60 % of average earnings over the best five years.
<i>Minimum Pension:</i>	\$142.00 per week for 2008 and \$148 per week for 2009. 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

<i>Contribution Requirement:</i>	50 paid or credited weekly contributions.
<i>Eligibility:</i>	Other than for the contribution requirement, the applicant must be eligible for Old-Age Contributory Pension.
<i>Amount Of Benefit:</i>	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

<i>Contribution Requirement:</i>	150 paid weekly contributions.
<i>Eligibility:</i>	The applicant has exhausted the maximum period for sickness benefit and is permanently incapable of work, and less than normal pension age.
<i>Amount Of Benefit:</i>	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; 33 % if between 45 and 50 and married for at least 3 years;
Child: 16 2/3% – up to 3 children at any one time if a spouse is also entitled;
Child (orphan or disabled): 33 %;
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 2008, \$116 per week and for 2009, \$121 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 2/3% 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: \$950 effective January 2009. 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: \$1,650 effective January 2009. 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

<i>Eligibility:</i>	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.
<i>Amount Of Benefit:</i>	The payment of a pension or a grant is based on the percentage loss of faculty suffered. <ul style="list-style-type: none">• 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

<i>Eligibility:</i>	Dependants as defined for survivors' benefit, but other persons who were dependent upon the earnings of the deceased may also qualify.
<i>Amount Of Benefit:</i>	Proportion of disablement pension - same percentage as for Survivors benefits. Other dependants receive 16 2/3%.

(d) MEDICAL EXPENSES

<i>Expenses Covered:</i>	<ul style="list-style-type: none">• 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.
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(e) FUNERAL GRANT

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

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 results of the 2000 national census and by applying appropriate mortality, fertility and migration assumptions. For the Best Estimate scenario the total fertility rate is assumed to increase from 1.8 to 1.9 in 2025, and remain constant thereafter. Table B.1 shows ultimate age-specific and total fertility rates. For the High Dependency and Low Dependency scenarios, the ultimate total fertility rates are assumed reached in 2025.

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

Age Group	2000	Ultimate Fertility Rates		
		Low Dependency	Best Estimate	High Dependency
15 – 19	0.063	0.069	0.065	0.062
20 – 24	0.101	0.107	0.101	0.096
25 – 29	0.083	0.093	0.089	0.084
30 – 34	0.074	0.082	0.078	0.074
35 – 39	0.035	0.041	0.039	0.037
40 – 44	0.010	0.013	0.012	0.011
45 – 49	-	-	-	-
TFR	1.80	2.00	1.90	1.80

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 2008. 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 *High Dependency* scenario and "very slow"¹ for the *Low Dependency* scenario. Sample mortality rates for the *Best Estimate* scenario and the life expectancies at birth and at age 65 for sample years are provided in Table B.2. Life expectancies at age 65 in 2068 for the three projection scenarios are shown in Table B.3.

Table B.2. Sample Mortality Rates & Life Expectancies

Age	Males			Females		
	2008	2038	2068	2008	2038	2068
0	0.0111	0.0075	0.0054	0.0099	0.0067	0.0047
5	0.0003	0.0001	0.0001	0.0002	0.0001	0.0000
15	0.0005	0.0003	0.0002	0.0002	0.0001	0.0001
25	0.0015	0.0009	0.0006	0.0008	0.0007	0.0005
35	0.0022	0.0014	0.0009	0.0013	0.0009	0.0007
45	0.0041	0.0028	0.0021	0.0021	0.0015	0.0011
55	0.0078	0.0058	0.0046	0.0044	0.0032	0.0024
65	0.0153	0.0122	0.0102	0.0088	0.0059	0.0042
75	0.0382	0.0326	0.0287	0.0244	0.0169	0.0122
85	0.1050	0.0961	0.0894	0.0729	0.0600	0.0505
95	0.2312	0.2249	0.2200	0.1864	0.1720	0.1603
Life Expectancy at:						
Birth	74.6	76.7	78.4	80.2	82.4	84.4
Age 65	17.3	18.0	18.7	20.6	21.9	23.2

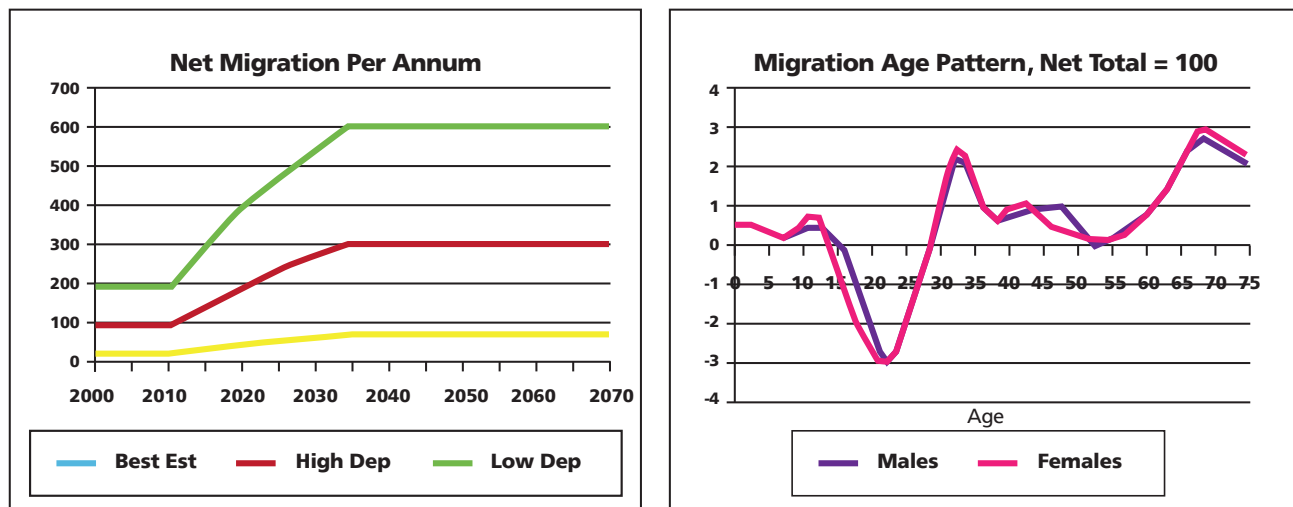
Table B.3. Age 65 Life Expectancies

	2008	2068		
		Low Dependency	Best Estimate	High Dependency
Male	17.3	17.9	18.8	19.5
Female	20.6	22.8	24.5	25.4

Net migration (in minus out) for each scenario is assumed to increase over the projection period. The following charts show assumed total net migration for each year from 2000 to 2070 and the age-specific rates when total net in-migration for a single year is 100.

¹Midpoint of Slow rates and no improvements

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



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. Due to the global recession, actual labour force participation rates declined in 2008 and 2009. Therefore, participation rates are assumed to remain at 2008 levels in 2009 and 2010 and then increased gradually until 2015 to 5% more than the rates in 2008. Over a 40-year period thereafter, age-specific labour force participation rates for ages above age 40 are assumed to gradually approach the rate that applied in 2008 to persons five years younger. Table B.3 below shows the assumed age-specific labour force participation rates in 2008 and 2068. Between these two years, rates are assumed to change linearly.

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

Age	Males		Females		Year	Males	Females
	2008	2068	2008	2068			
17	31%	33%	26%	27%	2008	74%	69%
22	77%	80%	74%	79%			
27	86%	89%	85%	90%			
32	87%	91%	86%	92%			
37	87%	90%	87%	92%			
42	86%	90%	86%	92%	2013	76%	71%
47	86%	90%	82%	91%			
52	84%	89%	77%	87%			
57	79%	88%	63%	81%			
62	56%	82%	40%	67%			
67	25%	58%	13%	42%	2018	76%	71%
					2028	76%	73%
					2038	77%	76%
					2048	79%	76%
					2058	79%	75%
					2068	80%	76%

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 2068, 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, 2008, 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. 2008 Active Insured Population, Earnings & Past Credits

Age	# of Active Insureds		Average Monthly Insurable Earnings		Average # of Years of Past Credits	
	Male	Female	Male	Female	Male	Females
15 – 19	1,221	1,256	1,156	990	1.2	1.1
20 – 24	5,635	6,148	1,739	1,577	4.1	3.9
25 – 29	6,817	8,103	2,191	2,090	7.8	7.6
30 – 34	6,940	8,451	2,404	2,224	11.7	11.5
35 – 39	7,419	8,888	2,488	2,203	15.8	15.5
40 – 44	7,459	8,811	2,541	2,230	20.0	19.6
45 – 49	7,438	9,033	2,574	2,193	24.2	23.7
50 – 54	6,906	7,772	2,628	2,237	28.4	27.9
55 – 59	5,322	5,487	2,602	2,189	32.6	32.0
60 – 64	3,277	3,040	2,488	1,965	34.9	34.2
65+	1,023	744	2,269	1,691	35.0	34.3
All Ages	59,456	67,734	2,388	2,106	18.3	17.8

Table B.6. Pensions in Payment - December 2008

Age	Old-Age Benefit		Invalidity Benefit		Survivors Benefits		Disablement & Death Benefits		Non-Contributory Pensions	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
0 – 4	-	-	-	-	-	166				
5 – 9	-	-	-	-	-	353				
10 – 14	-	-	-	-	-	385				
15 – 19	-	-	-	-	-	173				
20 – 24	-	-	-	-	8	3	1	1	-	-
25 – 29	-	-	6	4	3	10	2	3	-	-
30 – 34	-	-	17	16	4	29	8	2	-	-
35 – 39	-	-	34	29	2	39	12	5	-	-
40 – 44	-	-	79	88	4	106	21	11	-	-
45 – 49	-	-	170	190	3	168	32	13	-	-
50 – 54	-	-	237	341	-	178	47	27	-	-
55 – 59	-	-	388	455	-	338	39	11	-	-
60 – 64	677	594	470	543	-	371	18	10	-	-
65 – 69	2,918	2,862	-	-	-	173	8	6	-	-
70 – 74	2,580	2,643	-	-	-	153	7	9		
75 – 79	1,984	1,883	-	-	-	133	10	1	482	1,480
80 – 84	1,200	1,265	-	-	-	65	7	1	333	1,356
85 – 89	639	720	-	-	-	-	-	-	250	974
90 – 94	279	371	-	-	-	-	2	-	149	625
95 – 99	78	110	-	-	-	-	-	-	50	264
# of Pensioners	10,355	10,448	1,401	1,666	26	2,843	214	100	1,264	4,699
Avg Monthly Pension	\$1,055	\$845	\$1,091	\$891	\$92	\$394	\$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	51%	46%
22	75%	72%
27	81%	81%
32	84%	82%
37	86%	84%
42	88%	87%
47	90%	87%
52	90%	89%
57	91%	89%
62	88%	89%

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	0.135	-
27	0.405	0.270
32	0.585	0.450
37	1.260	0.855
42	1.170	1.710
47	2.655	2.700
52	3.510	4.860
57	6.120	8.325

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		Females	
	Probability Eligible Spouse	Avg # of Eligible Children	Probability of Eligible Spouse	Avg # of Eligible Children
17	0%	-	0%	-
22	8%	0.0	0%	0.0
27	5%	0.1	0%	0.1
32	25%	0.2	8%	0.3
37	23%	0.3	15%	0.6
42	26%	0.6	13%	0.5
47	31%	0.5	10%	0.5
52	29%	0.3	8%	0.3
57	32%	0.2	10%	0.1
62	31%	0.2	10%	0.0
67	26%	0.1	7%	-
72	10%	0.1	4%	-
77	9%	0.1	3%	-
82	8%	0.0	2%	-
87	6%	0.0	1%	-

Appendix C

Projection Results – Alternate Scenarios

Table C.1. Projected Barbados Population, High Dependency Scenario

Year	Total	Age 0 – 15	Age 16 – 64	Age 65 & Over	Ratio of persons 16 – 64 to 65 & over
2000	268,792	61,948	174,323	32,521	5.4
2005	276,064	60,276	182,071	33,717	5.4
2010	282,720	58,067	189,589	35,064	5.4
2015	288,659	56,823	192,039	39,797	4.8
2020	293,551	55,531	191,293	46,727	4.1
2025	297,314	54,232	187,252	55,831	3.4
2030	299,651	52,812	181,983	64,857	2.8
2035	300,260	51,333	178,108	70,818	2.5
2045	295,752	48,598	170,894	76,260	2.2
2055	285,464	46,195	162,566	76,703	2.1
2065	273,864	43,819	154,556	75,489	2.0
2070	268,299	42,680	150,810	74,809	2.0

Table C.2. Projected Cash Flows & Reserve, High Dependency 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 Year's Expenditure
2006	452.0	144.4	4.0	600.4	303.9	29.4	333.3	267.1	2,324	7.0
2007	471.8	165.6	4.6	642.0	331.4	36.3	367.6	274.4	2,618	7.1
2008	527.9	165.4	4.6	697.9	368.9	38.8	407.7	290.3	2,889	7.1
2009	544.4	183.9	4.9	733.2	402.9	39.3	442.3	291.0	3,180	7.2
2010	548.9	199.8	4.9	753.7	427.4	40.3	467.7	286.0	3,466	7.4
2011	564.5	213.8	5.1	783.4	451.2	41.3	492.6	290.8	3,756	7.6
2012	581.7	227.5	5.2	814.4	476.3	42.3	518.6	295.8	4,052	7.8
2013	611.2	237.2	5.5	853.9	500.0	43.4	543.4	310.5	4,363	8.0
2014	638.5	246.4	5.7	890.7	525.0	44.6	569.6	321.1	4,684	8.2
2018	733.6	284.3	6.6	1,024.5	643.9	50.0	693.9	330.6	5,992	8.6
2028	971.4	431.9	8.7	1,412.1	1,116.9	63.9	1,180.8	231.2	8,967	7.6
2038	1,264.0	474.7	11.4	1,750.1	1,753.0	81.9	1,834.8	(84.7)	9,685	5.3
2048	1,597.8	310.9	14.4	1,923.1	2,431.1	104.8	2,535.9	(612.8)	6,060	2.4
2058	1,999.2	(186.5)	18.0	1,830.8	3,194.3	134.1	3,328.4	(1,497.6)	(4,582)	(1.4)
2068	2,516.2	(1,254.6)	22.6	1,284.2	4,113.4	171.7	4,285.1	(3,000.9)	(27,219)	(6.4)

Table C.3. Projected Benefit Expenditure– High Dependency 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
2008	245	38	14	25	36	4	12.6%	5.0%
2009	277	43	15	22	42	4	13.3%	5.6%
2010	297	47	17	20	42	5	14.0%	5.9%
2011	316	50	18	19	43	5	14.4%	6.0%
2012	337	53	20	17	45	5	14.7%	6.1%
2013	355	56	21	15	47	6	14.7%	6.1%
2014	375	59	22	14	49	6	14.8%	6.1%
2018	472	72	26	8	57	7	15.8%	6.2%
2028	887	101	41	1	77	10	20.7%	7.2%
2038	1,451	128	58	0	101	14	25.0%	7.8%
2048	2,038	168	78	-	130	18	27.4%	7.6%
2058	2,701	208	100	-	164	22	28.8%	7.1%
2068	3,491	262	123	-	210	28	29.4%	6.4%

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

Table C.4. Projected Contributors & Pensioners, High Dependency 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		
2008	127,190	21,076	3,184	2,906	5,963	502	33,631	3.8
2009	126,016	22,096	3,198	2,971	5,484	561	34,310	3.7
2010	124,578	22,777	3,377	3,083	5,022	591	34,850	3.6
2011	126,911	23,396	3,550	3,204	4,581	621	35,352	3.6
2012	129,202	24,309	3,716	3,321	4,159	649	36,155	3.6
2013	131,471	25,247	3,878	3,424	3,756	677	36,981	3.6
2014	133,224	25,977	4,048	3,510	3,371	705	37,612	3.5
2018	136,834	29,778	4,628	3,644	2,044	799	40,893	3.3
2028	138,627	44,962	5,157	4,062	266	891	55,337	2.5
2038	137,787	58,114	5,207	4,637	1	910	68,868	2.0
2048	134,377	63,932	5,272	4,868	-	924	74,996	1.8
2058	128,935	65,968	5,035	4,781	-	885	76,669	1.7
2068	122,763	66,208	4,850	4,545	-	852	76,455	1.6

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

Table C.5. Projected Barbados Population, Low Dependency Scenario

Year	Total	Age 0 – 15	Age 16 – 64	Age 65 & Over	Ratio of Persons 16 – 64 to 65 & Over
2000	268,792	61,948	174,323	32,521	5.4
2005	276,892	60,526	182,208	34,159	5.3
2010	284,266	58,831	189,664	35,772	5.3
2015	291,112	58,398	192,034	40,680	4.7
2020	297,297	58,136	191,346	47,815	4.0
2025	302,597	57,887	187,664	57,045	3.3
2030	306,524	57,426	183,066	66,032	2.8
2035	308,695	56,689	180,071	71,935	2.5
2045	307,335	55,008	175,304	77,022	2.3
2055	300,868	53,845	170,041	76,981	2.2
2065	293,669	52,569	165,758	75,342	2.2
2070	290,388	51,891	164,079	74,418	2.2

Table C.6. Projected Cash Flows & Reserve, Low Dependency 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 Year's Expenditure
2006	452.0	144.4	4.0	600.4	303.9	29.4	333.3	267.1	2,324	7.0
2007	471.8	165.6	4.6	642.0	331.4	36.3	367.6	274.4	2,618	7.1
2008	527.9	165.4	4.6	697.9	368.9	38.8	407.7	290.3	2,889	7.1
2009	544.3	183.9	4.9	733.2	402.4	39.3	441.8	291.4	3,180	7.2
2010	548.8	199.9	4.9	753.7	426.4	40.3	466.7	287.0	3,467	7.4
2011	564.4	213.9	5.1	783.4	449.6	41.3	490.9	292.5	3,760	7.7
2012	578.0	227.7	5.2	810.9	473.6	42.3	515.9	295.0	4,055	7.9
2013	607.8	245.6	5.5	858.8	496.4	43.4	539.8	319.1	4,374	8.1
2014	641.0	264.9	5.8	911.7	521.9	44.8	566.7	345.0	4,719	8.3
2018	794.4	356.1	7.1	1,157.7	660.3	54.0	714.3	443.3	6,333	8.9
2028	1,275.4	672.2	11.5	1,959.1	1,262.9	80.7	1,343.6	615.5	11,844	8.8
2038	2,024.3	1,065.5	18.2	3,107.9	2,260.1	118.6	2,378.6	729.3	18,648	7.8
2048	3,126.3	1,510.3	28.1	4,664.7	3,679.9	168.4	3,848.3	816.4	26,322	6.8
2058	4,767.1	1,984.4	42.9	6,794.5	5,764.1	234.3	5,998.4	796.0	34,444	5.7
2068	7,310.6	2,394.3	65.8	9,770.8	8,838.9	324.9	9,163.8	607.0	41,426	4.5

Table C.7. Projected Benefit Expenditure – Low Dependency 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
2008	245	38	14	25	36	4	12.6%	5.0%
2009	276	43	15	22	42	4	13.3%	5.6%
2010	296	46	17	20	42	5	14.0%	5.9%
2011	314	50	19	18	43	5	14.3%	6.0%
2012	334	53	20	17	45	5	14.7%	6.0%
2013	352	55	21	15	47	6	14.7%	6.0%
2014	371	59	23	14	50	6	14.7%	6.0%
2018	480	74	28	8	62	8	15.0%	6.3%
2028	982	117	50	1	101	12	17.8%	8.2%
2038	1,818	179	83	0	162	19	20.1%	10.0%
2048	2,981	282	134	-	253	30	21.2%	11.5%
2058	4,696	424	207	-	392	45	21.8%	12.8%
2068	7,193	652	316	-	609	69	21.8%	13.9%

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

Table C.8. Projected Contributors & Pensioners, Low Dependency 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		
2008	127,190	21,076	3,184	2,906	5,963	502	33,631	3.8
2009	125,998	22,057	3,196	2,984	5,473	561	34,271	3.7
2010	124,553	22,698	3,372	3,109	5,001	591	34,772	3.6
2011	126,879	23,275	3,543	3,243	4,552	621	35,234	3.6
2012	128,302	24,136	3,706	3,374	4,124	649	35,989	3.6
2013	129,683	25,013	3,864	3,493	3,716	676	36,762	3.5
2014	131,774	25,676	4,031	3,594	3,328	704	37,334	3.5
2018	138,130	29,133	4,595	3,787	1,999	797	40,312	3.4
2028	142,785	42,960	5,153	4,351	254	896	53,614	2.7
2038	140,609	54,026	5,219	5,058	1	920	65,223	2.2
2048	138,288	57,998	5,254	5,373	-	931	69,557	2.0
2058	134,965	58,940	5,021	5,361	-	894	70,216	1.9
2068	131,807	58,416	4,919	5,212	-	875	69,421	1.9

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

Appendix D

Income, Expenditure & Reserves, National Insurance Fund, 2006–2008

	(millions of \$'s)		
	2006	2007	2008
Income			
Contribution Income	452.0	471.8	527.9
Investment Income	144.4	165.6	165.4
Other Income	4.0	4.6	4.6
Total Income	600.4	642.0	697.9
Expenditure			
Benefits			
Sickness Benefit	15.5	19.0	24.8
Maternity Benefit	8.0	7.9	9.4
Maternity Grant	0.2	0.5	0.3
Funeral Benefit	1.9	1.7	1.9
Old-age Benefit	196.4	217.0	245.0
Invalidity Benefit	31.1	35.3	38.3
Survivor's Benefit	12.6	12.9	13.7
Non-Cont. Old Age Benefit	28.9	27.5	25.3
Travelling Expenses	0.1	0.2	0.1
Medical Expenses	0.4	0.7	0.7
Injury Benefit	4.0	4.5	5.0
Disablement Benefit & Grant	4.5	4.1	4.3
Death Benefit	0.3	0.3	0.3
Total Benefit Expenditure	303.9	331.4	368.9
Administrative Expenditure	29.4	36.3	38.8
Total Expenditure	333.3	367.6	407.7
Excess of Income over Expenditure	267.1	274.4	290.3
Reserves at End of Year	2,324.3	2,618.4	2,888.7

Appendix E

Income, Expenditure & Reserves, Unemployment Fund, 2006–2008

	(million of \$'s)		
	2006	2007	2008
Income			
Contribution Income	27.86	28.87	31.75
Investment Income	6.24	7.21	7.19
Total Income	34.10	36.08	38.94
Expenditure			
Benefits			
Benefits	26.08	27.16	32.30
Administrative Expenses	1.77	1.84	1.94
Total Expenditure	27.85	29.00	34.24
Excess of Income over Expenditure	6.25	7.08	4.70
Reserves at End of Year	116.03	123.10	127.80

Appendix F

Income, Expenditure & Reserves, Severance Fund, 2006–2008

	(millions of \$'s)		
	2006	2007	2008
Income			
Contribution Income	8.58	9.20	9.92
Investment Income	4.36	5.55	5.72
Repayment by Employers	1.09	0.76	0.32
Total Income	14.03	15.51	15.96
Expenditure			
Benefits			
Rebates	2.79	5.33	2.43
Employer Payments	1.03	2.35	1.06
Administrative Expenses	0.62	0.63	0.59
Total Expenditure	4.44	8.31	4.07
Excess of Income over Expenditure	9.59	7.20	11.88
Reserves at End of Year	91.67	98.87	110.76



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