Trinidad and Tobago

Eighth Actuarial Review of the National Insurance System as of 30 June 2010

Centre for the International Promotion of Québec Public Expertise

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Abbreviations and acronyms

AIDS	Acquired Immune Deficiency Syndrome
CIPQPE	Centre for the International Promotion of Quebec Public Expertise
CPI	Consumer Price Index
CSO	Central Statistical Office
GAP	General Average Premium
GDP	Gross Domestic Product
HIV	Human Immunodeficiency Virus
EI	Employment Injury
ILO	International Labour Office
MIE	Maximum Insurable Earnings
NIF	National Insurance Fund
NIP	National Insurance Plan
NIS	National Insurance System
NIBTT	National Insurance Board of Trinidad and Tobago
OPP	Occupational Pension Plan
OSHA	Occupational Safety and Health Authority
PAYG	Pay-as-you-go
SEP	Self-employed persons
TFR	Total fertility rate
TT$	Trinidad and Tobago Dollar
UN	United Nations
US	United States
WC	Workmen's Compensation

Executive summary

The present actuarial review covers the 5-year period up to 30 June 2010 and presents a projection of the financial situation of the National Insurance System for the next 50 years.

Experience of the NIS since the last actuarial review

Contribution income and benefit expenditures have closely matched projections over the period from 1 July 2005 to 30 June 2010. The TT$3.3 billion shortfall in accumulated assets at the end of the financial year 2009-2010 is essentially due to unfavourable deviations regarding investment returns.

With effect from January 2008, a new contribution rate schedule has been adopted and modifications have been introduced to different benefits. In February 2012, the minimum pension has been increased to TT$3,000. All these modifications are reflected in the present actuarial review.

During the period from 1 July 2005 to 30 June 2010, the cumulative inflation rate reached 52.3 percent. This must be considered for the adjustment of benefits in January 2013.

Demographic pressure

The total population of Trinidad and Tobago will increase from 1,317,714 in 2010 to 1,430,247 in 2036 and will then initiate a slow decrease to reach 1,340,232 in 2060. The number of persons at pensionable age (60 and over) will grow from 161,005 in 2010 to 412,067 in 2060, while the population aged 16 to 59 (the contributory base) will decrease by 18 per cent. The number of working-age persons for each person aged 60 and over will thus fall dramatically from 5.4 to 1.7 over the projection period.

NIS demographic and financial projections

The total number of pensioners is projected to increase significantly in the future, from 108,270 in 2009-10 to 321,931 in 2060, while at the same time the number of contributors will fluctuate around 490,000 for the next 25 years and then start to decline to 400,000 in 2059-60. The ratio of contributors to pensioners will thus decrease from 4.3 to 1.3 over the next 50 years.

Financial projections reveal that system's expenditure will exceed contribution income from financial year 2012-13. Total assets of the NIS will however continue to increase until 2026-27. From 2027-28, assets will rapidly decrease and the NIS funds will be completely depleted in 2039-40 if nothing is modified in terms of contributions or benefits of the system. The pay-as-you-go (PAYG) cost rate is projected to increase from its current level of 9.2 percent in 2010-11 to 29.7 percent in 2059-60. The general average premium of the system (the constant contribution rate necessary to finance all NIS benefits over the next 50 years) is 17.6 percent. This may be compared to the present contribution rate of 11.4 percent.

The contribution rate should be increased from 2013 at least to face the PAYG cost of the system over the period 2013-2017. Thereafter, there is a need to plan for long-term contribution rate increases. One possible schedule of contribution rates is as follows:

Period	Contribution rate
2013 to 2017	12%
2018 to 2020	15%
2021 to 2040	17%
2041 to 2060	25%

Analysis of proposed modifications

Increase of the maximum insurable earnings (MIE)

Three options are analysed concerning future increases of the maximum insurable earnings:

- Under option 1, the MIE would be increased to TT$10,000 in 2013, TT$12,000 in 2014 and by TT$1,000 per year thereafter until 2020. Annual adjustments of the MIE after 2020 would be based on a general wage index.
- Under option 2, the MIE would be increased to TT$10,000 in 2013 and by TT$1,000 per year thereafter until 2015. From 2016, it would be set at three times the average national wage.
- Under option 3, the MIE would be increased to TT$11,800 in 2013 and adjusted annually thereafter using a general wage index.

Faster increases of the MIE lead to lower costs since an increase of the MIE has an immediate effect on contribution income and a delayed impact on benefit expenditures. The financial implications of the options described above are as follows:

Indicator	Base scenario	Option 1	Option 2	Option 3
General average premium	17.6%	17.3%	16.4%	17.3%
Year of reserve exhaustion	2039-40	2041-42	2044-45	2040-41

Conversion of the present earnings class system into a system based on a percentage of earnings

The present earnings class system is complex to administer. In order to simplify the system, it is proposed to adopt a career-average indexed-earnings formula. Three options are analysed. These formulas have different objectives. Here is a list of suggested criteria to help analyse the various options in the context of this conversion:

- It should simplify the administration of the system.
- It should be cost neutral.

- The new formula should maintain of the equivalence between the old and new formulas both in the short-term and the long-term.
- It should encourage participation to the NIS by rewarding long contribution histories.
- It may seek to operate a redistribution in favor of low earnings persons, with the side effect of reducing the relative importance of the minimum pension.

The three options presented in the report are:

1. Reproduction of the present pension formula
   Example: 2 percent for the first 15 years of contribution plus 1.1 percent for each year over 15
2. Fixed-rate per year of contribution
   Example: 1.6 percent per year
3. Redistributive formula putting more weight on low earnings
   Example: 1.8 percent per year for earnings below TT$4,150 (50 percent of the MIE) plus 1.2 percent per year for earnings above TT$4,150

Option 1 essentially reproduces the present NIS retirement pension calculation for earnings classes V and above. The transition between the old and the new formula would be smooth and would not affect future retirees, in the short-term and in the long-term.

Options 2 and 3 do not reproduce exactly the present formula. However, because of the presence of the minimum retirement pension, very few persons would be affected negatively by the application of the new pension formula. For those few cases that would be affected, it would be appropriate, at least for a certain period, to compare the pension amount of new pensioners under the old and the new formula and to grant the higher of the two pensions.

Extension of coverage to self-employed persons

The report presents an update of the financial projections performed in 2010 concerning the extension of coverage to self-employed persons (SEP). Benefits offered to this group would include Long-term benefits (retirement, invalidity, survivorship) and Short-term benefits (incapacity, maternity, funeral grant). They would have access to a retirement pension from age 60 (as for salaried employees). The contribution rate would be 11.2 percent, entirely paid by the SEP (the government could consider the possibility to support part of the contributions of low-income workers). Age credits (for eligibility purposes) would be granted at a rate of 50 contribution weeks for each complete year elapsed between the age of 50 and the attained age of the person at the introduction of these measures (up to a maximum of 6 years of credit).

After the year of implementation, during which administrative costs would be higher, the PAYG rate slowly increases from 1.4 percent in 2013-14 to 3.5 percent in 2019-20, to reach around 25 percent from year 2053-54. The general average premium associated with the SEP provisions is 9.4 percent. Total assets increase until 2049-50 and still represent 2.1 times the annual SEP expenditures in 2059-60.

Modification of survivors' benefits

The report analyses four options concerning a revision of survivors' benefits.

Under **option 1**, minimum survivors' benefits would be modified as follows:
- Spouse: TT$600
- Child: TT$600
- Dependent parent (if both are alive): TT$300 each
- Dependent parents (if only one is alive): TT$600
- Orphan: TT$1,200

Under **option 2**, survivors' benefits would be expressed as a percentage of the greater of (1) the insured person's pension or (2) the minimum retirement pension:
- Spouse: 60%
- Child (if at least one parent is alive): 10%
- Child (if no parent is alive): 15% per child, but not exceeding 60%
- Dependant parents: 40%

Under **option 3**, minimum survivors' benefits would be modified as follows:
- Spouse: $1,000
- Child: $600
- Dependent parent: $600
- Orphan: $1,200

Under **option 4**, survivors' benefits would be expressed as a percentage of the greater of (1) the insured person's pension or (2) the minimum retirement pension:
- Spouse: 30%
- Child: 20%
- Dependant parents (per parent): 10%
- Dependant parents (if only one parent is alive): 20%
- Orphan: 40%

The financial implications of these options are:

Indicator	Base scenario	Option 1	Option 2	Option 3	Option 4
General average premium	17.6%	17.8%	18.6%	18.4%	17.6%
Year of reserve exhaustion	2039-40	2038-39	2034-35	2035-36	2039-40

Modification of maternity benefits

It is envisaged to extend the maximum duration of maternity benefits from 13 to 14 weeks. With this modification, the GAP related to Short-term would increase from

0.560 percent to 0.575 percent of insurable earnings and the total GAP of the system would increase from 17.637 percent to 17.651 percent.

Eligibility to the retirement pension

A reduction from 750 to 260 weeks of the period of contribution necessary to be eligible to the retirement pension would increase the GAP from 17.6 percent to 20.4 percent. If such a modification is implemented, it would be necessary to modulate the amount of the minimum pension for persons who have less than 750 weeks of contributions. This modulation should be done on a pro rata basis.

Automatic adjustment of system's parameters

Different elements of the system need to be adjusted to keep their value over time: the maximum insurable earnings (MIE), minimum and maximum pension rates, grants and pensions in payment. In the case of the NIS, these adjustments are made at five-year intervals, following the recommendations of the periodic actuarial reviews. It is recommended to start the application of an automatic annual adjustment of the system's parameters as soon as possible.

Retirement age

An increase of the NIS retirement age would be justified considering the projected increase of the life expectancy in Trinidad and Tobago. The increase of the retirement age may also be justified by the labour force shortage that is anticipated for Trinidad and Tobago in the future, namely on account of the shrinking of the population aged 16 to 59. In most countries where such a measure has been implemented, a transition period has been introduced in order to allow people to adjust their retirement planning to the new rules.

Other issues

Duplication of compensation in case of work injuries

There is a need for better coordination between Employment injury benefits paid by the NIS and the compensation offered under the WC Act in order to avoid duplication of benefits. One possibility would be for each incapacitated worker to choose between the two existing programs. Another possibility, in line with the social protection point of view, would be that employment injury benefits would be paid by the NIS only. Elimination of the compensation offered under the WC Act could be an opportunity to increase benefits paid by the NIS with a corresponding increase in employers' contributions (compensated by the elimination of premiums paid by employers to comply with the WC Act).

A third possibility would be that the NIBTT offers liability insurance to employers. The NIBTT would then act as an insurer. Because such coverage would be optional, adverse selection should be expected and the rate setting process should ensure that this specific block of business would not be subsidized by the universal program. An alternative optional insurance product offered by the NIBTT could be an EI benefit package that would be more generous than the current one. This package could be offered to enterprises in which there is a consensus between employers and workers

to give up benefits available under the WC Act. This set-up could be a step towards the elimination of the liability features in the compensation of work injuries.

In any circumstances, it appears necessary to analyse the adequacy of compensation of injured workers with permanent disabilities. There is also a need for greater collaboration between NIBTT and OSHA on various aspects.

Optional contributions to the NIS

The report presents an analysis of the elements to be considered if it is envisaged to offer the possibility for NIS insured persons to pay optional contributions to a National Insurance Plan administered by the NIBTT. The following factors would affect the attractiveness of this new product:

- The present coverage under occupational pension plans;
- The capacity of low-income workers to save for retirement;
- The level of the maximum insurable earnings under the NIS;
- The existing tax incentives to save for retirement.

It would be necessary to study the investment instruments currently offered by the private sector and the level of their management fees before deciding on the opportunity to introduce a new player in the field of retirement savings instruments. The report presents design features of an optional contribution system, if it is decided to go forward with the implementation.

Investment policy

It is recommended to establish closer links between the *Investment Policy Statement* and the actuarial review in order to adequately reflect the time-horizon of the system for the determination of the NIBTT asset allocation. The new *Investment Policy Statement* dated June 2012 takes into account this recommendation.

The proportion of overseas investments in the NIBTT portfolio has increased from 4 to 16 percent of the total portfolio over the period 2006-2011. It is hoped that the legislative constraints applied to overseas investments will be relaxed, so that the NIBTT will have more flexibility to diversify its portfolio.

Level of administrative expenditures

Assessment of the appropriate level of administrative expenditure for any social security systems must be based on several criteria that are necessarily based, at least in part, on judgment. There is no reliable unique benchmark valuable in all circumstances. The Board of Directors of the NIBTT has established a limit on administrative expenditures equal to 7.5 percent of contribution income. In 2010, administrative expenditures have represented 4.9 percent of contribution income. Some large social security systems in developed countries have a lower relative level of administrative expenditure. However, Trinidad and Tobago, because of its size, cannot benefit from the same economies of scale as larger countries. In addition, the NIBTT is responsible for the administration of Short-term and Employment injury benefits that, often, are not under the responsibility of the pensions' administering body in most developed countries.

List of recommendations

1. Pensions in payment and fixed-rate benefits (except the minimum retirement pension) should be increased by 52.3 percent in January 2013 to reflect the increase of the CPI since the last actuarial review (Appendix 6 presents the recommended benefit rates). At the same time, the maximum insurable earnings should be increased to TT$11,800.

2. From January 2014, all system's parameters should be subject to an automatic annual adjustment. Pensions in payment and fixed-rate benefits should be adjusted based on the evolution of the CPI and the maximum insurable earnings should be adjusted according to a wage index.

3. The total contribution rate for salaried workers should be increased to 12.0 percent for the period January 2013 to December 2017. Contribution income should be allocated to the three benefit funds according to the following proportions:
   - Long-term fund: 89 per cent
   - Short-term fund: 6 per cent
   - Employment injury fund: 5 per cent

   The pay-as-you-go cost rate at the end of the projection period in 2060 is considered unsustainable at 30 per cent of insurable earnings. It is recommended to adopt reforms, either by way of increasing contribution income and/or reducing benefit promises, in order to ensure the long-term financial sustainability of the NIS. Particular consideration should be given to the development of a strategy for gradually increasing the contribution rate over the next three decades whilst favouring the gradual increase of the retirement age.

4. Reserve objectives to be maintained for each fund should continue to be established as follows:
   - Short-term: 2 times the annual benefit expenditure
   - Employment injury: 10 times the annual benefit expenditure
   - Long-term: the remaining excess of income over expenditure

5. The present earnings class system should be converted into a career-average indexed-earnings system. The report presents three possible formulas for such a conversion and indicates a series of criteria that should be considered for their evaluation. It is recommended that the various stakeholders be consulted on those options and the suggested criteria before deciding on the most appropriate option.

6. Conditional to the conversion of the present earnings class system into a system based on a percentage of earnings, the number of weeks of contributions required for eligibility to the retirement pension could be reduced from 750 to 260. However, for persons having paid contributions for less than 750 weeks, the minimum pension should be prorated.

7. The contribution rate for the SEP fund should be established at 11.2 percent (10.7 percent for Long-term benefits and 0.5 percent for Short-term benefits). Age credits for eligibility purposes should be granted at a rate of 50 contribution weeks for each complete year elapsed between the age of 50 and the attained age of the person at the introduction of these measures (up to a maximum of 6 years of credit). The government should consider the possibility to support (through a direct subsidy) part of the contributions of low-income SEP.

8. Minimum survivors' benefits should be increased as follows:
   - Spouse: $600
   - Child: $600
   - Dependent parent: $600
   - Orphan: $1,200
9. The maximum duration of maternity benefits should be increased from 13 to 14 weeks.
10. The Ministry of Finance and the Ministry of Labor should jointly investigate the extent of duplicate compensation between Employment injury benefits paid the NIS and the compensation offered under the WC Act. In addition, the NIB should undertake, in collaboration with the Ministry of Labour, the measurement of the adequacy of compensation offered to injured workers by the existing systems of compensation, particularly for persons with a permanent loss of earning capacity.
11. Before permitting new optional contributions in a new National Insurance Plan, it would be necessary to study the investment instruments already offered by the private sector and the level of their management fees.
12. Closer links should be established between the *Investment Policy Statement* and the actuarial review in order to adequately reflect the time-horizon of the system in the determination of the NIBTT asset allocation (taken into account in a new *Investment Policy Statement* dated June 2012). In addition, the NIBTT should continue its representations for an increase of the limit presently imposed on overseas investments.
13. Administrative expenditures of the NIBTT should be allocated by branch according to contribution income and benefit expenditure in equal proportions, until a more accurate system can be developed.

Introduction

Section 70 of the Trinidad and Tobago National Insurance Act 35 of 1971 requires an actuarial review of the National Insurance System (NIS) at intervals not exceeding five years. The present actuarial review covers the 5-year period up to 30 June 2010. The main objectives of this review are to assess the long-term financial condition of the National Insurance Fund (NIF) and study possible ways to improve contribution and benefit provisions. The present report focuses as well on specific issues raised at the request of the NIBTT. Concerning more specifically the modifications contemplated to the NIS, the terms of reference of the actuarial review include:

- increase of the maximum insurable earnings (MIE) and recommendations on a mechanism for future adjustments;
- modification of the present earnings class system into a system based on a percentage of earnings;
- extension of coverage to self-employed persons, including provision of co-payments to low-earnings workers and co-funding of age credits;
- modification of certain parameters of survivors' benefits;
- increase of the maximum duration of the maternity benefit from 13 to 14 weeks;
- assessment of the financial impact of the elimination of potential duplication in the compensation offered by the NIS and by the Labour Law following a work injury;
- analysis of the feasibility of introducing an optional system of voluntary contributions beyond the requirements of the existing NIS system, for the purpose of yielding enhanced retirement income.

This report has been prepared by the Centre for the International Promotion of Québec Public Expertise (CIPQPE) based on the information provided by the NIBTT. The CIPQPE appointed Mr. Pierre Plamondon, Senior Actuary, Mr. Gilles Binet, Senior Actuary, and Ms. Doan-Trang Phan, Actuarial Assistant, to conduct this actuarial review. The actuaries worked in close cooperation with Ms. Lisette Alexander, Actuarial Assistant at the NIBTT.

Mr. Plamondon, Mr. Binet and Ms. Phan were on mission in Port-of-Spain from 24 January to 2 February 2012 to gather and study statistical data and information on the social security system, all of which was ably facilitated by NIBTT staff. Subsequently, the model of the International Financial and Actuarial Service of the ILO was used to prepare the demographic and financial projections associated with the actuarial review.

Section 1 of the report presents a review of the experience of the five-year period from 1 July 2005 to 30 June 2010. Section 2 describes the projection of the general population and the macro-economic framework used for the valuation. Section 3 presents the NIS demographic and financial projections on the basis of the present provisions of the system. Section 4 presents the NIS demographic and financial projections according to certain specific changes to contributions and/or benefits included in the terms of reference. Section 5 analyses different policy issues. The appendices contain a summary of key NIS contribution and benefit provisions, a

description of the methodology used for the valuation, key data inputs and assumptions, detailed information on NIS finances for the five-year period ending on 30 June 2010, examples of the application of the new pension formulas and detailed tables concerning the adjustment of contributions and benefits for the period 2013-2017.

The CIPQPE would like to express its appreciation to Ms. Lorna Charles, Executive Director of the NIBTT, and its Executive Committee, particularly Mr. Ramlakhan Seecharan, Executive Manager, Planning and Technology, for the cooperation of the Institution in providing information and timely support to the actuaries. In addition, Ms. Lisette Alexander offered invaluable and timely assistance.

1. Review of the experience of the NIS since the last actuarial review

This section discusses the evolution of the financial situation of National Insurance System (NIS) between 1 July 2005 and 30 June 2010 (the financial year of the National Insurance Board of Trinidad and Tobago runs from 1 July to 30 June). NIBTT audited financial statements present detailed information for each of the three branches of the social security system: long-term benefits, short-term benefits and employment injury benefits. More detailed information on the reconciliation of financial and demographic data of the NIS over the past five years appears in Appendix 4.

1.1 Amendments to the NIS since the 7th Actuarial Review

The following modifications have been introduced in the legislation in January 2008.

Contribution rate and maximum insurable earnings
The maximum insurable earnings (MIE) was increased from TT$4,377 to TT$8,300 per month on 7 January 2008. At the same time, the number of earnings classes was increased from 12 to 16. A contribution rate increase in three steps was announced:
- 10.5% of insurable earnings from 7 January 2008;
- 10.8% of insurable earnings from 4 January 2010;
- 11.4% of insurable earnings from 2 January 2012.

Retirement benefits
- Increase of the minimum Retirement pension from TT$1,000.00 to TT$2,000.00 per month.
- Increase of the minimum Retirement grant from TT$200.00 to TT$2,000.00.

Maternity benefits
- Maternity grant now payable for each birth in the case of multiple births.
- Maternity grant now based on the father's contributions where a mother does not qualify in her own right.
- Increase of the Maternity grant from TT$2,000.00 to TT$2,500.00.

Survivors' benefits
- Increase of the minimum Child allowance from TT$320.00 to TT$400.00 per month.
- Increase of the minimum Orphan allowance from TT$640.00 to TT$800.00 per month.
- Implementation of a minimum monthly Widows/widowers pension of TT$400.00.
- Implementation of a minimum monthly Dependent parent pension of TT$200.00.

Employment injury and related benefits
- Magnetic resonance imaging now covered up to TT$2,000.00 per examination per body part.

– Increase of the maximum medical expenses reimbursement from TT$18,000.00 to TT$22,500.00.

Funeral grant

– Increase in the Funeral grant from TT$4,000.00 to TT$5,000.00.

Adjustment of other pensions in payment

– Other pensions in payment were increased by 25 per cent.

It is the current practice, for the NIS, to adjust its key parameters (contribution rate, maximum insurable earnings, pensions in payment and fixed-parameters) every five years, following the recommendations of the periodic actuarial review. Thus the actuarial review normally takes into account the forthcoming changes in its projections. However, it may happen, as was the case in 2008, that the actual legislative changes are not identical to the recommendations of the actuarial review. In particular, the base scenario of the 7th Actuarial Review did not include the contribution rate increases. In addition, it was assuming that the minimum retirement pension of TT$2,000 would increase linearly to TT$2,500 for the highest earnings' class, while in reality the adopted minimum pension was the same for all pensioners at TT$2,000.

Revised projections appear in the report concerning the extension of coverage to self-employed that has been delivered to the NIBTT in 2010. [1] This report presents, in Appendix IV, projections based on the exact provisions adopted in 2008. In that context, the present experience analysis concentrates on the comparison of observed results with the projections of the most recent actuarial report (the 2010 special report) which considers the exact evolution of the legislation during the period 2005-2010. It must be noted that this report uses the same methodology and assumptions as the 7th Actuarial Review.

1.2 Analysis of the experience of the NIS for the period 1 July 2005 to 30 June 2010 and comparison with projections

Table 1.1 presents consolidated revenues and expenditures for all branches. Miscellaneous income and expenditure, which represent minor amounts, are not included in the table.

The application of the recommendations of the actuarial review concerning benefit indexing, the increase of the maximum insurable earnings and the increase of the contribution rate (fully reflected in the 2010 special report) has caused a significant increase in both benefit expenditure and contribution income during financial years 2007-08 and 2008-09 (see Table 1.1. and Chart 1.1). Recommendations were applied in the second half of 2007-08 and had their full impact only in 2008-09. Contribution income increased by 93 percent from 2005-06 to 2009-10 while the increase of benefits has been 119 percent over the same period.

[1] ILO, *Report to the Government, Actuarial Review of the National Insurance System as of 30 June 2005*. ILO/TF/Trinidad and Tobago/R.16 (Geneva, 2010), p. 50.

Contribution income and benefit expenditures have matched the projections relatively well. Over the period, contribution income exceeded by only 4 percent the projections of the 2010 special report, while benefit payments were 7 per cent lower than the projections. Employment injury benefits varied from projections by 15 percent while the deviations in long-term and short-term benefits were not material (respectively 2 and 5 per cent).

Table 1.1 Comparison of projected versus actual results of the NIS regarding the different components of revenue and expenditure (million TT$)

	2005-06	2006-07	2007-08	2008-09	2009-10
Projections of the 7th Actuarial Review					
Contribution income	1,314	1,432	1,837	2,292	2,425
Investment income *	1,409	1,444	1,460	1,551	1,635
Benefit expenditure	1,023	1,083	1,638	2,251	2,381
Administrative expenses	93	100	107	114	122
Projections of the 2010 special report					
Contribution income	1,314	1,432	1,893	2,430	2,609
Investment income *	1,409	1,444	1,468	1,577	1,686
Benefit expenditure	1,023	1,083	1,514	2,148	2,268
Administrative expenses	93	100	107	114	122
Actual results					
Contribution income	1,373	1,502	2,042	2,549	2,645
Investment income *	-241	725	2,249	-23	677
Benefit expenditure	1,001	1,037	1,517	2,066	2,191
Administrative expenses	97	107	115	125	129

* Note: Investment income includes realized and unrealized gains.

Sources: NIBTT audited financial statements, *Seventh Actuarial Review of the National Insurance System as of 30 June 2005* and *Actuarial Review of the National Insurance System regarding the Extension of Coverage for the Self-Employed as of 30 June 2005*.

Chart 1.1 Evolution of contributions and benefits (all funds combined)

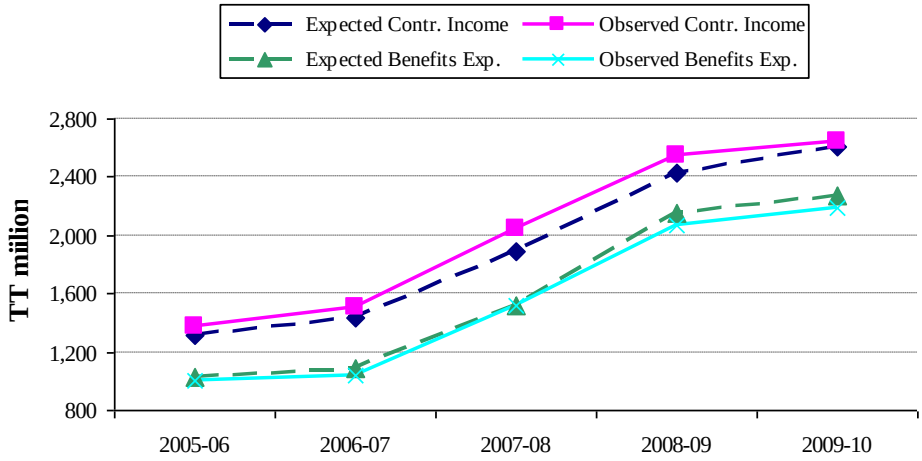


Table 1.2 presents a comparison of NIS total funds projected according to the 7th Actuarial Review and the 2010 special report with the corresponding actual balance sheet data (minor items, namely "Other liabilities and borrowings", are not considered as they are not relevant to actuarial reviews).

Table 1.2 Evolution of funds as at 30 June (million TT$)

	2005	2006	2007	2008	2009	2010
Projections of the 7th Actuarial Review	13,076	14,684	16,376	17,928	19,405	20,963
Projections of the 2010 special report	13,076	14,684	16,376	18,108	19,861	21,767
Actual results	13,076	13,157	14,283	16,985	17,385	18,422
Ratio Actual / Projection of the 2010 report		90%	87%	94%	88%	85%

Sources: NIBTT audited financial statements, *Seventh Actuarial Review of the National Insurance System as of 30 June 2005* and *Actuarial Review of the National Insurance System regarding the Extension of Coverage for the Self-Employed as of 30 June 2005*.

Assets have been lower than expected at the end of each financial year. The ratio of actual to projected fund has fluctuated from one year to the other and stands at 85 per cent on 30 June 2010. Considering that actual results concerning contribution income and benefit expenditure have been relatively close to projections (as discussed above), the TT$3.3 billion shortfall in accumulated assets at the end of the financial year 2009-2010 is essentially due to unfavourable deviations regarding investment returns. The average annual rate of return of the fund over this five-year period has been 4.4 percent, compared to the average return of 9.3 percent assumed for that period in the actuarial review. A comparison of actual versus projected rates of return is presented in Table 1.3.

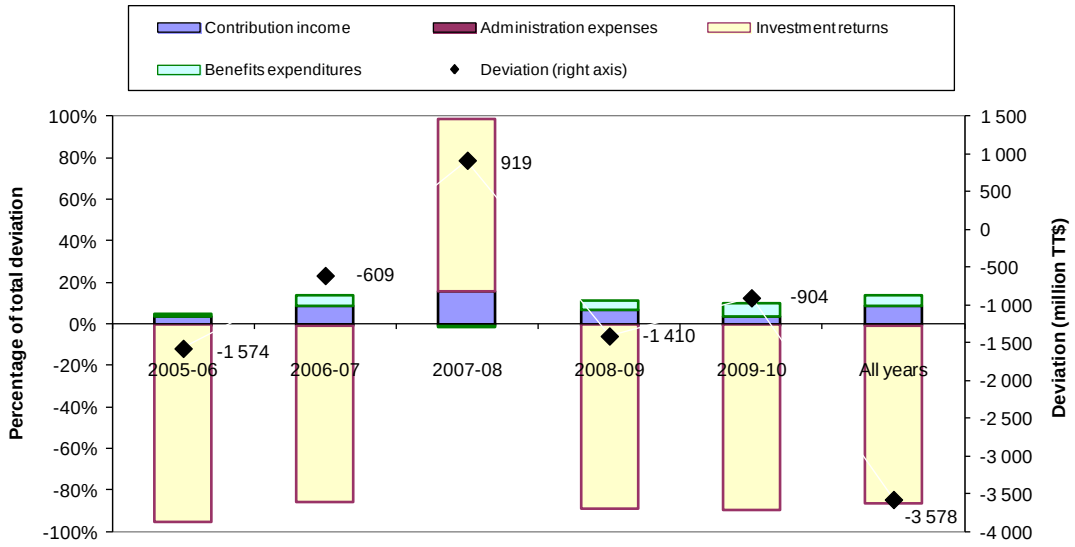
Table 1.3 Rate of return of the fund (2005-06 to 2009-10)

Year	Rate of return	
	Actual [a]	Projected
2005-06	-1.8%	10.7%
2006-07	5.4%	9.8%
2007-08	15.5%	8.9%
2008-09	-0.1%	8.7%
2009-10	3.9%	8.4%
Average [b]	4.4%	9.3%

a Calculated as 2 X I / (A + B - I), where I is the annual investment income, A is the fund at beginning of the year and B is the fund at the end of the year
b Geometric average

Chart 1.2 presents, for each financial year, the contribution of the various components of revenue and expenditure to the deviation in projected assets as at 30 June 2010. In this chart, bars showing the distribution of sources of deviations in each financial year have all the same size. Consequently, it has no relationship with the size of the total deviation, which is indicated separately with reference to the right axis.

Chart 1.2 Sources of deviations in the projected increase of assets from 2005-06 to 2009-10

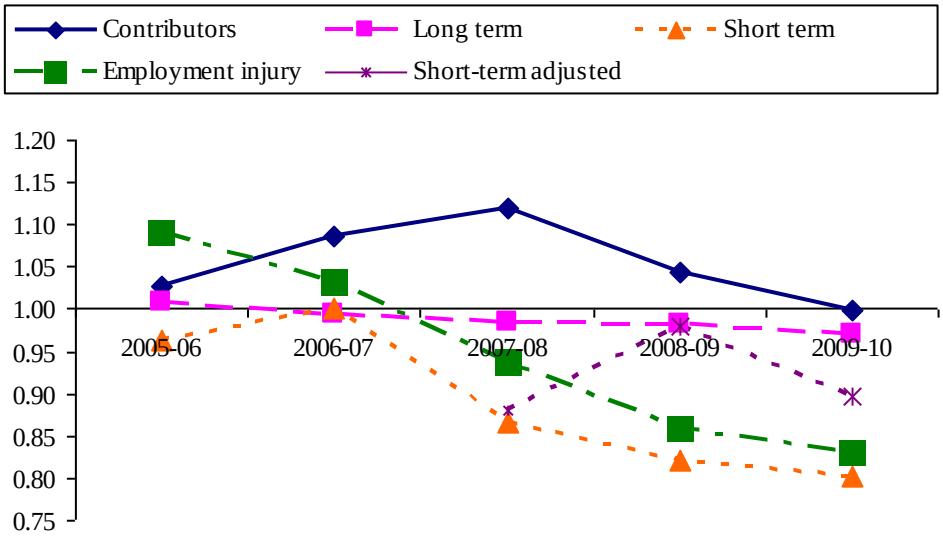


The investment returns have been lower than the projection by $4.2 billion while the net impact of the other items is a surplus of $0.6 billion. Other income [2] not considered in the actuarial review has generated a surplus of $0.2 billion.

Analysis of NIS demographic data

Chart 1.3 shows the ratio of observed to projected number of contributors and beneficiaries. The number of contributors has been larger than the projection in four out five projection years. The pattern of deviations was irregular. In 2009-10, the observations matched the projection. It seems that the macroeconomic framework of the 7th Actuarial Review was a reasonable and prudent forecast of the economic outlook.

Chart 1.3 Ratio of observed to expected contributors and beneficiaries



Note: The short-term adjusted curve does not include any maternity grant

Long-term benefit recipients in 2009-2010 amounted to 115,945 or 3 percent below the forecasted number of recipients of 119,527. The decreasing trend of the ratio is driven by the fall in the number of invalidity and survivors pensions. Retirement pensions have been close to the forecast during the period while the retirement grants have been larger by an average of 10 per cent.

The trend of the ratio for short-term benefits is misleading due to the implementation of the special maternity grant based upon the eligibility of fathers. On one hand, the use of the new maternity benefits may not have reached its full maturity and, on the other hand, it seems that the projection relied on a conservative approach due to the lack of reliable data to estimate the impact of the new provision. Two sets of results are presented in the above chart for financial years 2007-08, 2008-09 and 2009-10 in order to capture the fundamental trend. In order to better assess the experience of the

[2] Those revenues are penalty income and surplus realized on the NIBTT staff pension plan.

branch, it is advisable to rely on the adjusted ratio for assessing the situation of the branch. The adjusted ratio also shows a decreasing trend, fluctuating between 0.88 and 0.98, but not as much as the non-adjusted one. The trend is driven by sickness benefits for which the ratio was consistently below 1.0 (0.92 on average) while the ratio of maternity and funeral benefits was above 1.0 (averages of 1.10 and 1.05 respectively).

The employment injury ratio has started a steady decrease in 2007-08 and reached 0.86 in 2009-10. This phenomenon deserves investigation. It could be related to an improvement of the injury experience, increasing delays in claiming or an emerging disincentive in claiming.

1.3 Comments on financial statements

Certain accounting practices have changed since the 7th Actuarial Review. Assets are now entirely allocated between the three benefit funds. In addition, following a recommendation of the 7th Actuarial Review, the "Accumulated reserve" has been eliminated. In addition, the "Revaluation reserve" has significantly reduced in size following the application of fair value accounting.

As regards the allocation of administrative expenditures by branch, this is presently done with reference to contributions only. It must be recalled that the 7th Actuarial Review was recommending to allocate administrative expenditures according to contribution income and benefit expenditure in equal proportions. This method should be applied in the preparation of future financial statements.

Recommendation

Administrative expenditures of the NIBTT should be allocated by branch according to contribution income and benefit expenditure in equal proportions, until a more accurate system can be developed.

2. Projected demographic and macroeconomic environment of Trinidad and Tobago

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

Demographic and macroeconomic variables were projected for a period of 50 years, following an analysis of past trends and an estimate of plausible future experience. Population and economic projections are an intermediary step to derive NIS projections.

2.1 Population projection

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

The last official population census took place in 2000, where the resident population was estimated at 1,262,000. A new census has been conducted in 2010, but results were not available for use in this actuarial review. The projection process thus starts in 2001. Estimations of the population made by the CSO for the period 2000 to 2010, in conjunction with other statistical indicators, have been used to check the overall consistency of projections.

Fertility

The total fertility rate (TFR) represents the average number of children each woman of childbearing age would have if she had all her children in a particular year. If there is no migration, a TFR of 2.1 is required for each generation to replace itself. The TFR has been fairly stable since the mid-1990s, fluctuating around 1.76. It is assumed that this pattern will remain constant over the projection period.

Table 2.1 Historical fertility rates in Trinidad and Tobago (1990-2006)

Year	Total fertility rate	Year	Total fertility rate
1991	2.51	1999	1.85
1992	2.54	2000	1.84
1993	2.27	2001	1.78
1994	2.10	2002	1.65
1995	2.00	2003	1.71
1996	1.85	2004	1.62
1997	1.91	2005	1.61
1998	1.83	2006	1.68

Source: Central Statistical Office of Trinidad and Tobago

Mortality

Life expectancy and improvements in mortality are assumed to occur in accordance with UN estimates. While deaths due to HIV and AIDS have not been explicitly accounted for, the rate of mortality improvements chosen considers implicitly the effects of the HIV/AIDS pandemic. Life expectancy at birth in 2010 is 68.7 for males and 73.4 for females. Life expectancy at advanced ages is a key driver of the cost of retirement pensions. At age 60, life expectancy is 18.7 years for males and 21.0 years for females in 2010. Mortality improvements are based on the UN medium variant. Under this pattern of mortality improvements, it is projected that life expectancy will reach 75.4 for males and 80.3 for females in 2060.

Migration

Data on migration is scarce in Trinidad and Tobago. Information on new entries in the country has been obtained from the Integrated Border Management System of the Ministry of National Security. However, exits from the country are not specifically accounted for, so the database cannot be a reliable source for estimation on net migration. According to this department, the influx of immigrants would be positive in three Caribbean countries: Trinidad and Tobago, Barbados and Antigua. On the other hand, some sources (like the UN) project a negative net migration for the short- and medium-term. Given the lack of reliable information and the divergence of views on that question, it is assumed that net migration will be zero for the whole projection period.

Projected population

Chart 2.1 presents the projected population of Trinidad and Tobago from 2010 to 2060 separated into three age categories: children (0-15), persons who can potentially contribute to the NIS (16-59) and persons at pensionable age (60 and over). The evolution of the relative size of each age-group (notably the decrease of the population of children and the increase of the number of persons at pensionable age) illustrates the projected ageing of the population of Trinidad and Tobago.

Chart 2.1 Projected population of Trinidad and Tobago, by age groups (2010-2060)

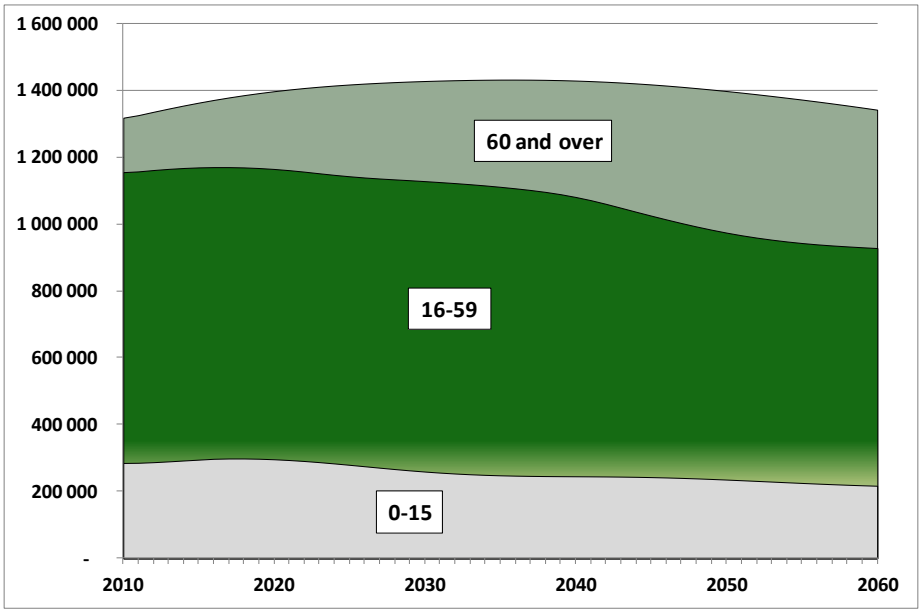


Table 2.2 presents detailed population projections. We may observe that the total population will increase from 1,317,714 in 2010 to 1,428,799 in 2040 and will then initiate a slow decrease to reach 1,341,694 in 2060. The number of persons at pensionable age (60 and over) will grow from 161,051 in 2010 to 412,423 in 2060, while the population aged 16 to 59 will decrease by 18 per cent. The number of working-age persons for each person aged 60 and over will thus fall dramatically from 5.4 to 1.7 over the projection period.

Table 2.2 Projected population of Trinidad and Tobago (2010-2060)

Year	Total	Age			Ratio of persons 16-59 to 60 & over
		0-15	16-59	60 & over	
2010	1,317,714	285,176	871,487	161,051	5.4
2020	1,396,916	296,267	869,965	230,684	3.8
2030	1,427,430	259,495	870,251	297,683	2.9
2040	1,428,799	245,425	836,831	346,543	2.4
2050	1,397,518	235,555	739,912	422,052	1.8
2060	1,341,694	217,087	712,184	412,423	1.7

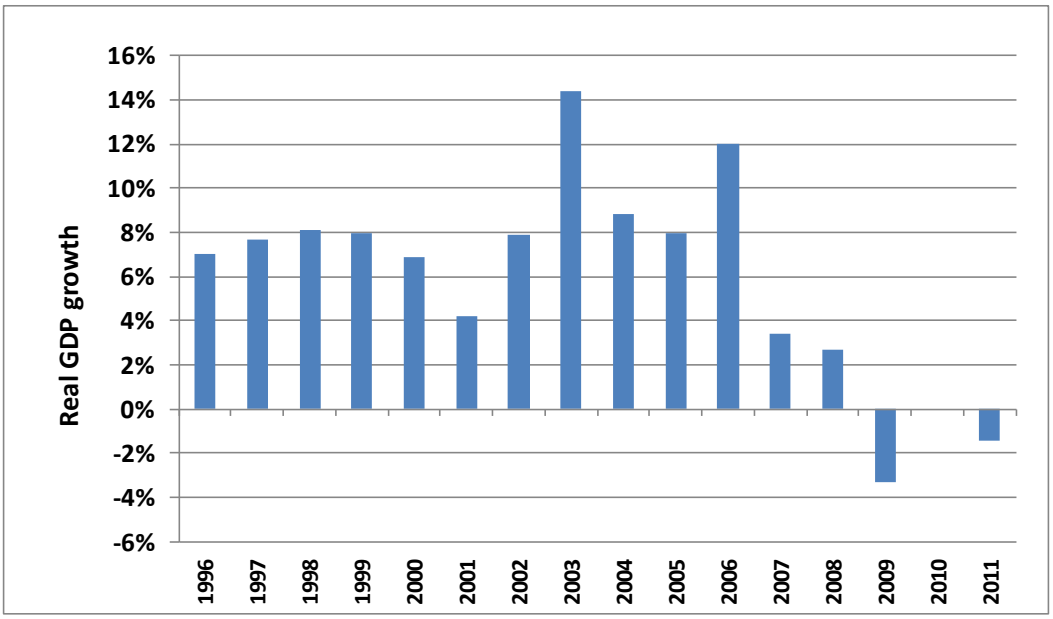
2.2 Macroeconomic framework

Economic growth

Trinidad and Tobago's economy is driven by the energy sector. This explains the high historical economic growth of the country (see Chart 2.2), but also its volatility over recent years and its slight decline (in real terms) since 2009. The Trinidad and Tobago economy is projected to decline by 1.4 percent in real terms in 2011 as a

result of flat growth in the petroleum sector coupled with lower levels of economic activity in the non-petroleum sector.[3]

Chart 2.2 Real GDP growth of Trinidad and Tobago (1996-2011)



Source: Central Statistical Office of Trinidad and Tobago.

Trinidad and Tobago's economy will be challenged over the medium term by the weakness of the non-energy sector, the turbulence affecting international markets and the low recovery in the US, which is Trinidad and Tobago's main trading partner. In addition to the uncertainty about the energy-sector activity in the short-term, many have concerns about the performance of the construction sector, which is a major employer. Furthermore, owing to the pessimistic outlook for the global economy, and the US in particular, which will have a negative impact on external demand for energy exports, GDP growth should be positive but weak in 2012 and 2013.[4]

In this valuation, it is projected that real GDP will grow by 1.4 percent in 2012 and 2.3 percent in 2013. It is not anticipated that economic growth will revert to the high performance of the last decades. In addition, the future shrinking of the labour force (driven by the decrease of the population aged 16 to 59) will put additional constraints on economic growth. The long-term GDP growth assumption is the result of assumptions on the future evolution of the labour force, the wage share of GDP, assumed to remain constant at its level of 2010, and labour productivity (discussed

[3] Government of the Republic of Trinidad and Tobago, Ministry of Finance, *Review of the Economy 2011, From Steady Foundation to Economic Transformation*.

[4] Economist Intelligence Unit, *Trinidad and Tobago Country Report*, January 2012.

below). Under the macroeconomic framework hereby proposed, the resulting real GDP growth will gradually converge to 1 percent in the long-term.

Productivity

Preliminary data indicate that the productivity of labour may reduce by 2.2 percent in 2011. For this review, it is assumed that the productivity of labour will grow by 0.5 percent in 2012 and 1.5 percent per year from 2013. This long-term assumption is in line with the average assumption used for the valuation of several social security systems around the world.[5]

Table 2.3 Projected GDP growth, productivity and total employment

Year	Real GDP growth (%)	Increase of the productivity per worker (%)	Increase of the number of workers (%)
2011	-1.4	-2.2	0.9
2012	1.4	0.5	0.9
2013	2.3	1.5	0.8
2014	2.1	1.5	0.6
2015	2.0	1.5	0.5
2020	1.5	1.5	0.0
2030	1.5	1.5	0.0
2040	0.9	1.5	-0.6
2050	0.6	1.5	-0.9
2060	1.0	1.5	-0.5

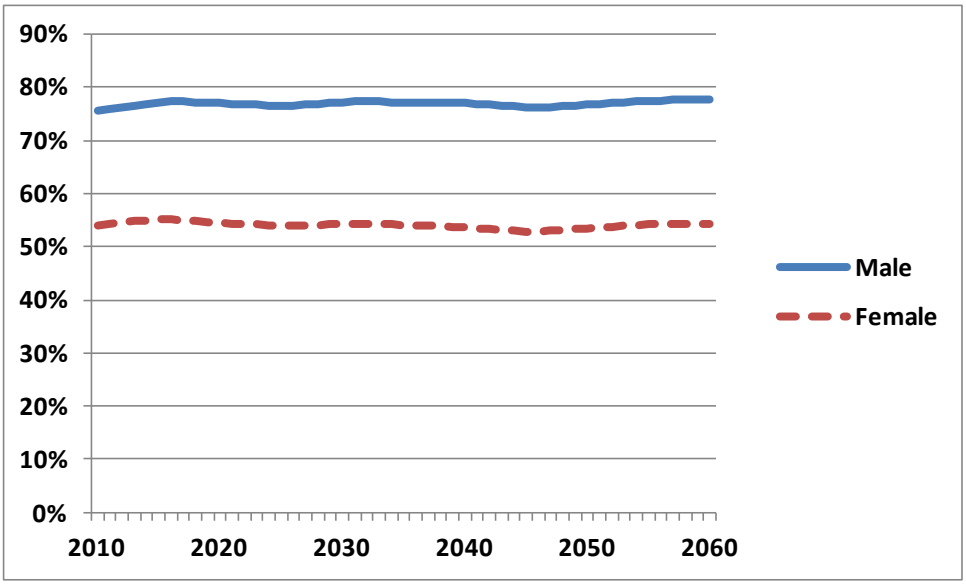
Labour force

As domestic economic conditions deteriorated during the recent economic crisis, the unemployment rate increased from 4.1 percent in 2008 to 6.3 percent in 2010. In 2010, male unemployment was 4.9 percent, whereas female unemployment was 8.4 percent. Young persons between the ages of 15 and 29 years account for more than half of the unemployed.

For the future, it is assumed that age-specific labour force participation rates will stay constant, at their level of 2010, for the entire projection period. Under this scenario, the total participation rate is almost constant in the future. The total male participation rate (15-64) will slightly increase from of 77 percent in 2010 to 79 percent in 2060 and the total female participation rate will remain stable around 55 percent.

[5] See: International Social Security Association, *Assumptions in the actuarial evaluation process – Comparison of demographic and economic assumptions in the actuarial analysis of 14 social security systems* (Geneva, 2009), p.18.

Chart 2.3 Projected total participation rate, by sex (2010-2060)



Under this scenario, the unemployment rate of 6.1 percent in 2010 will gradually decrease to 5.5 percent in 2020 and will stay around that level thereafter. Self-employed persons represent 23 percent of the total employed population in 2010. It is assumed that this relationship will remain constant in the future.

Table 2.4 Labour market balance (2010-2060)
(in thousands)

	2010	2020	2030	2040	2050	2060
Total population	**1,318**	**1,397**	**1,427**	**1,429**	**1,398**	**1,342**
Male	661	698	710	710	692	661
Female	657	699	717	719	706	681
Population 15-64	**944**	**964**	**966**	**946**	**864**	**799**
Male	476	484	485	475	434	400
Female	468	480	481	471	431	398
Labour force	**618**	**643**	**646**	**629**	**578**	**538**
Male	363	378	380	372	341	317
Female	256	266	265	257	236	221
Total participation rate	**63%**	**63%**	**62%**	**62%**	**59%**	**61%**
Male	73%	74%	73%	73%	70%	72%
Female	52%	52%	51%	50%	49%	50%
Total employed	**581**	**608**	**610**	**595**	**546**	**508**
Male	343	359	362	354	325	302
Female	237	248	248	240	221	206
Salaried	**450**	**471**	**472**	**460**	**423**	**393**
Male	249	261	263	257	236	219
Female	200	210	209	203	186	174
Self-employed	**131**	**137**	**138**	**134**	**123**	**115**
Male	94	98	99	97	89	83
Female	37	39	39	37	34	32
Unemployed	**38**	**35**	**36**	**34**	**31**	**30**
Male	19	18	18	17	16	15
Female	19	17	18	17	16	15
Unemployment rate	**6.1%**	**5.5%**	**5.5%**	**5.4%**	**5.4%**	**5.5%**
Male	5.3%	4.8%	4.7%	4.7%	4.6%	4.7%
Female	7.3%	6.5%	6.7%	6.6%	6.6%	6.6%

Inflation

Like many Caribbean countries, Trinidad and Tobago is exposed to supply-side inflationary pressures, owing to global commodity price volatility. Historically, inflation has been under control for most of the period from the mid-1990s to 2004. However, the inflation rate has increased significantly from 2005. The annual average rate of inflation (ratio of the average CPI for the 12 months of a calendar year to the average CPI of the 12 months of the preceding year) was 12 percent in 2008, 7 percent in 2009 and 10.6 percent in 2010 (see Table 2.5). Inflation peaked at

16.2 per cent in August 2010. In the first half of 2011, inflation decreased on account of lower food price inflation. It fell sharply from 12.5 percent in January 2011 to 0.6 percent in August 2011, but restarted to increase through the end of 2011, reaching 5.7 percent in December 2011.

Table 2.5 Historical inflation rates in Trinidad and Tobago (1990-2006)

Year	Inflation rate (%)	Year	Inflation rate (%)
1991	3.8%	2001	5.6%
1992	6.5%	2002	4.1%
1993	10.8%	2003	3.7%
1994	8.8%	2004	3.7%
1995	5.3%	2005	6.9%
1996	3.3%	2006	8.3%
1997	3.6%	2007	7.9%
1998	5.6%	2008	12.0%
1999	3.4%	2009	7.0%
2000	3.5%	2010	10.6%

Source: Central Statistical Office of Trinidad and Tobago

Food prices are anticipated to remain high and maintain upward inflationary pressures in 2012-13, but at single-digit levels. It is assumed that inflation will stand at 5.5% in 2012 and 5.1% in 2013.[6] It is projected that the inflation rate will gradually converge to 3 percent in 2021 and remain at that level thereafter.

Wage increases

The real wage increase is assumed to gradually converge towards the productivity per worker, as it is expected that wages will adjust to efficiency levels over time. Nominal wage increases will thus fluctuate slightly around 4.5% over the projection period.

Interest rates and yield on investments

In a continuation of its accommodative policy adopted at the end of the 2008/2009 financial year, the Central Bank reduced the repo rate on three occasions between October 2009 and January 2010 to a level of 5.00 per cent. As inflation started to rise, the Bank left the policy rate unchanged over the next six months. However, with widespread evidence of low domestic business confidence, considerable spare capacity and stable core inflation, the Bank resumed its policy of repo rate reductions, lowering it on four occasions to 3.75 per cent by November 2010.[7] The repo rate has continued to decline to 3.00 per cent in 2011. Given the lack of evidence suggesting a significant pick-up of the domestic economy, and with the US policy rate set to remain at its current low, it is not anticipated that interest rates will increase in the short run.

[6] Economist Intelligence Unit, *Trinidad and Tobago Country Report*, January 2012.

[7] Central Bank of Trinidad & Tobago, *Annual Report 2010*.

Concerning the projected yield on the investments of the Social Insurance Fund, we have considered the target asset allocation of a draft Investment Policy Statement of the NIBTT with an associated long-term expected return (see Table 2.6).

Table 2.6 Target asset allocation and projected long-term return

Type of investment	Target asset allocation	Projected long-term return	
		Real	Nominal
Local equities	30%	7.0%	10.2%
Overseas investments	10%	4.0%	7.1%
Property and mortgages	10%	6.0%	9.2%
Local fixed-income securities	45%	1.5%	4.5%
Cash and money market	5%	0.5%	3.5%
Total		**3.8%**	**6.9%**

Source: Investment Policy Statement of the NIBTT

For the purpose of this actuarial review, it is thus assumed that the long-term nominal rate of return of the Social Insurance Fund will be 6.9 percent. However, in the short-term, considering the uncertain environment following the recent financial crisis, it is assumed that the real rate of return of the fund will gradually increase from 2011 to 2015. A nominal rate of return of 8.5 percent from 2011 to 2015 is consistent with that objective.

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

Year	Inflation rate (%)	Annual nominal increase of average wage (%)	Rate of return of the Fund (%)
2011	5.6	7.3	8.5
2012	5.5	5.6	8.5
2013	5.1	6.7	8.5
2014	4.8	6.4	8.5
2015	4.6	6.1	8.5
2020	3.3	4.8	7.2
2030	3.0	4.5	6.9
2040	3.0	4.5	6.9
2050	3.0	4.5	6.9
2060	3.0	4.5	6.9

3. NIS demographic and financial projections

This valuation deals with the ability of the NIS to meet its future obligations at the time they fall due. This is done under an open-group approach. It is assumed that workers will continue to be insured by the NIS indefinitely, thus paying contributions, accruing benefit entitlements and later receiving benefits in accordance with the legal provisions of the system. Future contributions and benefits are calculated according to the demographic and economic assumptions presented in Section 2 and on the basis of the database and assumptions appearing in Appendix 3.

The main purpose of the valuation is to find out whether the financing of the NIS is on course, and not to forecast numerical values exactly. Due to the long-term nature of the assumptions, absolute figures contain a high degree of uncertainty. Therefore, results should be interpreted carefully and future actuarial reviews undertaken on a regular basis will make possible a validation of the assumptions in the light the actual experience.

This review deals with the expenditure and revenue of all branches administered by the NIS: long-term benefits, short-term benefits and employment injury benefits. The key area of concern will be the long-term branch since it accounts for the largest proportion of future expenditure. It is certain that this proportion will grow significantly in the future due to its current immature state. Long-term benefits will attain a mature state only after the youngest of the first generation of contributors have become pensioners then died and all survivors' pensions paid on their behalf ceased. This requires that the situation of the system be analysed over the next 50 years. The general methodology of the actuarial review is presented in Appendix 2.

3.1 Defining the "base scenario"

NIBTT policy objective is to maintain the link between contributions and benefits and the economic conditions. Given the design of the system, the technique that has been used in the past in order to reach that objective was to increase the maximum insurable earnings and pensions in payment on an ad hoc basis following the recommendations of periodic actuarial reviews.

In that context, base scenario projections presented hereunder are made on the following basis:

- The maximum insurable earnings is increased in January 2013 to be equivalent to twice the national average wage of salaried workers (TT$11,800) and is increased thereafter at five-year intervals to maintain the same relationship between the MIE and the national average wage, and
- Pensions in payment (before the application of the minimum pension) and fixed parameters of the system (excluding the minimum retirement pension, as discussed below) are increased in January 2013 by a percentage equal to the increase of the CPI over the period from July 2005 to June 2010. Thereafter, all

pensions in payment and fixed parameters of the system are increased at five-year intervals to reflect the increase of the CPI over the previous five years.

As regards the minimum retirement pension, when considering the actual increase of the CPI during the period from 1 July 2005 to 30 June 2010 (52.3 percent, as shown in Table 3.8), the recommendation would have been to increase the minimum pension to TT$3,047 in 2013 in the absence of the legislative change that took place at the beginning of 2012. Since the minimum pension has been increased to TT$3,000 from February 2012, it is assumed in the base scenario that the minimum pension will stay at that level until the end of 2017 and will follow CPI increases thereafter.

Recommendation

Pensions in payment and fixed-rate benefits (except the minimum retirement pension) should be increased by 52.3 percent in January 2013 to reflect the increase of the CPI since the last actuarial review (Appendix 6 presents the recommended benefit rates). At the same time, the maximum insurable earnings should be increased to TT$11,800.

3.2 Demographic projections

As shown in Table 3.1, the total number of pensioners is projected to increase significantly in the future, from 108,270 in 2009-10 to 321,953 in 2060, while at the same time the number of contributors will fluctuate around 500,000 for the next 25 years, but will then start to decrease to a level just over 400,000 in 2059-60. The ratio of contributors to pensioners will thus decrease from 4.3 to 1.3 over the next 50 years.

Table 3.1 Projected number of contributors and pensioners - Long-term benefits, 2010-2060

Year	Number of contributors	Number of pensioners			Total number of pensioners	Ratio of contributors to pensioners
		Retirement	Invalidity	Survivors		
2010-11	491,278	77,575	4,236	31,363	113,173	4.3
2011-12	494,956	80,917	4,431	32,611	117,959	4.2
2012-13	497,958	84,061	4,619	33,314	121,995	4.1
2013-14	499,994	87,688	4,771	34,090	126,550	4.0
2014-15	501,189	92,112	4,769	34,900	131,781	3.8
2015-16	501,951	96,045	4,851	35,833	136,729	3.7
2016-17	502,045	99,805	4,937	36,813	141,554	3.5
2017-18	501,536	103,388	5,016	37,835	146,239	3.4
2018-19	500,532	106,615	5,121	38,833	150,570	3.3
2019-20	499,159	110,266	5,175	39,876	155,317	3.2
2024-25	491,777	131,078	5,268	44,628	180,974	2.7
2029-30	490,219	149,289	5,748	48,642	203,679	2.4
2034-35	488,943	166,024	6,227	52,446	224,696	2.2
2039-40	477,623	187,033	6,610	55,622	249,265	1.9
2049-50	425,295	248,238	5,140	60,025	313,403	1.4
2059-60	403,664	253,710	4,966	63,277	321,953	1.3

Demographic projections concerning Short-term benefits are presented in Tables 3.2. As regards Sickness and Maternity benefits, the number of beneficiaries is relatively stable until 2040 and decrease thereafter following the decrease of the number of active insured persons (see Table 3.1). On the other hand, the number of Funeral grants increases significantly and continuously over the projection period, following the general ageing of the population. On that account, the Funeral grant could be classified as a long-term benefit.

Table 3.2 Projected number of beneficiaries - Short-term benefits, 2010-2060

Year	Sickness benefit	Maternity benefit *	Special maternity grant	Funeral grant
2010-11	12,009	6,738	781	5,115
2011-12	12,158	6,814	790	5,179
2012-13	12,294	6,869	796	5,251
2013-14	12,409	6,900	800	5,327
2014-15	12,500	6,905	801	5,408
2015-16	12,578	6,882	799	5,491
2016-17	12,637	6,833	794	5,584
2017-18	12,675	6,758	787	5,681
2018-19	12,690	6,659	777	5,787
2019-20	12,687	6,540	765	5,901
2024-25	12,524	5,825	691	6,605
2029-30	12,387	5,348	635	7,462
2034-35	12,303	5,281	621	8,271
2039-40	12,054	5,355	624	9,006
2049-50	10,796	4,969	585	10,246
2059-60	10,187	4,564	537	11,645

* The number of "regular" maternity grants is assumed equal to the number of maternity benefit recipients.

Demographic projections concerning Employment injury benefits are presented in Tables 3.3. All benefits except the Disablement pension follow the general evolution of the number of active insured persons. Disablement pensions, on the other hand, are paid for long periods and this benefit will continue its maturing process over the next decades.

Table 3.3 Projected number of beneficiaries – Employment injury benefits, 2010-2060

Year	Injury allowance	Disablement pension	Disablement grant	Death benefit	Medical expenses
2010-11	2,129	3,226	115	420	158
2011-12	2,159	3,391	116	426	160
2012-13	2,203	3,556	118	432	163
2013-14	2,259	3,720	119	440	168
2014-15	2,323	3,884	120	442	172
2015-16	2,394	4,047	121	449	178
2016-17	2,468	4,209	122	454	183
2017-18	2,544	4,370	123	458	189
2018-19	2,617	4,529	124	465	194
2019-20	2,687	4,686	125	471	199
2024-25	2,727	5,428	126	494	202
2029-30	2,762	6,079	127	491	205
2034-35	2,787	6,624	126	480	207
2039-40	2,752	7,044	123	463	204
2049-50	2,448	7,419	110	421	182
2059-60	2,052	7,281	104	373	152

3.3 Financial projections

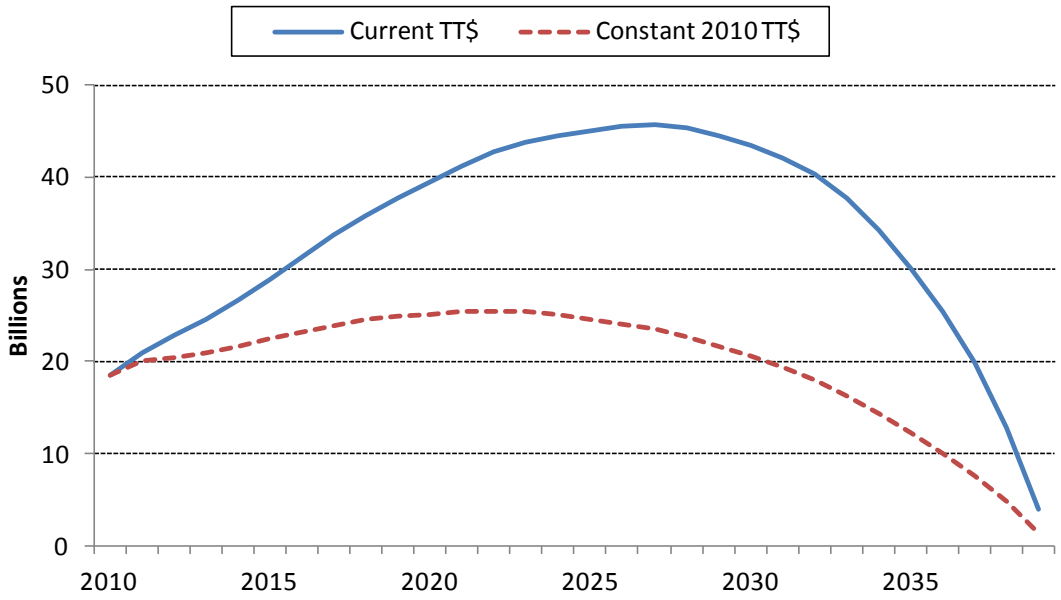
Apart from being driven by the number of beneficiaries, the cost of NIS is also determined by the average amount of benefit paid to these persons. One indicator of the evolution of pension amounts is the evolution of pensions' replacement ratios (ratio of the average pension to the average wage of active contributors). Table 3.4 presents these replacement ratios for each type of pensions and by sex. Replacement ratios do not change dramatically over time. This reflects the fact that the system has already reached a certain state of maturity since it has been in existence for 40 years and the oldest active insured persons have had the possibility to contribute during (almost) the maximum potential period from age 16 to age 60. The high replacement ratios of the retirement pension reveal that the minimum pension takes an important place in the benefit levels offered by the system, especially for women.

Table 3.4 Projected replacement ratios – Long-term benefits, 2010-2060

Year	Retirement		Invalidity		Survivors	
	Males	Females	Males	Females	Widows	Widowers
2010-11	0.81	1.24	0.37	0.52	0.18	0.31
2011-12	0.76	1.17	0.34	0.49	0.17	0.32
2012-13	0.86	1.32	0.32	0.46	0.17	0.31
2013-14	1.00	1.54	0.37	0.54	0.20	0.35
2014-15	0.93	1.44	0.42	0.61	0.22	0.37
2019-20	0.92	1.43	0.41	0.61	0.23	0.37
2029-30	0.85	1.36	0.37	0.56	0.24	0.36
2039-40	0.84	1.26	0.33	0.49	0.24	0.36
2049-50	0.86	1.22	0.29	0.45	0.25	0.36
2059-60	0.84	1.16	0.26	0.41	0.26	0.37

For accounting purposes, NIBTT presents the financial results under three branches: long-term benefits, short-term benefits and employment injury benefits. Provisions exist for transferring reserves between branches once certain ratios are met. In this section, it is considered more convenient to present the evolution of total assets irrespective of their allocation by branch. Financial projections assume that the present contribution of 11.4 per cent is maintained for the whole projection period, under the base scenario. Chart 3.1 presents the projection of assets (until the fund is depleted) in current and constant TT dollars.

Chart 3.1 Projected evolution of total NIS assets, 2010-2060



Financial projections reveal that system's expenditure will exceed contribution income from financial year 2012-13. Total assets of the NIS will however continue to increase until 2026-27 (even if part of investment income will have to be used, in

addition to contributions, to support the expenditure of the system during that period). From 2027-28, assets will rapidly decrease and the NIS funds will be completely depleted in 2039-40 if nothing is modified in terms of contributions or benefits of the system.

Table 3.5 Key moments of the future evolution of NIS assets

	Year
System's expenditure first exceeds contributions	2012-13
System's expenditure first exceeds contributions plus investment income (assets start to decrease)	2027-28
Assets are exhausted	2039-40

The ratio of assets to total expenditure of the system is presently equal to 8.0. The increase of the minimum pension at TT$3,000 causes a sharp decrease of the ratio to 6.6 in 2012-13, as shown in Chart 3.2. The ratio decreases to a level below 2.0 from year 2034-35.

Chart 3.2 Ratio of assets to total expenditure (funding ratio)

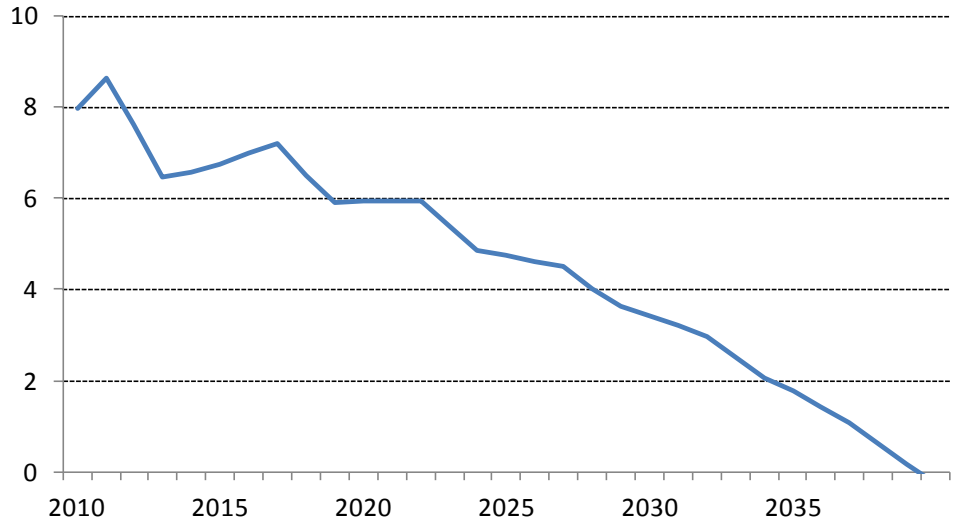


Table 3.6 presents the future evolution NIS expenditures for each branch. It also presents the total expenditure in relation to total insurable earnings (the pay-as-you-go rate) and to the GDP. The PAYG cost rate is projected to increase from its current level of 9.2 percent in 2010-11 to 29.7 percent in 2059-60. The general average premium (GAP)[8] of the system (the constant contribution rate necessary to finance all NIS benefits over the next 50 years) is 17.6 percent. This may be compared to the present contribution rate of 11.4 percent. There is thus a need to plan for future contribution rate increases (see Chart 3.3). Detailed financial projections are presented in Table 3.7.

Table 3.6 Projected NIS expenditure, 2010-2060 (thousand TT$)

Year	Benefit expenditure							Expenditure as % of	
	Long-term			Short-term	Employment injury	Admin. expenses	Total expenditure		
	Retirement	Invalidity	Survivors					Ins. earnings	GDP
2010-11	1,921,416	48,783	172,982	143,441	54,395	114,335	2,455,351	9.2	1.7
2011-12	2,401,841	55,664	182,919	148,600	59,019	123,597	2,971,640	10.7	1.9
2012-13	3,082,312	77,808	232,122	176,184	74,860	131,061	3,774,347	11.8	2.3
2013-14	3,235,122	99,540	284,504	203,628	93,050	138,022	4,053,866	11.2	2.3
2014-15	3,415,289	101,994	299,378	209,641	100,010	145,680	4,271,993	11.4	2.3
2015-16	3,566,495	107,069	316,817	215,015	106,149	153,358	4,464,902	11.5	2.2
2016-17	3,723,544	113,209	336,604	219,550	111,958	161,074	4,665,940	11.7	2.2
2017-18	4,440,217	137,191	391,011	247,320	132,023	168,997	5,516,760	12.4	2.5
2018-19	5,170,627	161,125	449,243	273,719	154,619	176,795	6,386,128	13.1	2.7
2019-20	5,373,807	164,348	474,620	277,440	163,163	184,277	6,637,655	13.3	2.7
2024-25	7,780,239	219,288	684,648	333,222	234,223	223,393	9,475,014	15.3	3.1
2029-30	10,444,388	302,379	945,052	401,276	314,117	269,769	12,676,981	16.6	3.3
2034-35	14,138,773	420,698	1,287,352	499,117	413,275	325,715	17,084,929	17.9	3.6
2039-40	19,586,071	574,211	1,727,799	622,619	533,231	393,805	23,437,737	20.1	4.0
2049-50	40,271,258	698,449	3,024,545	889,725	827,712	578,700	46,290,388	28.7	5.5
2059-60	61,512,306	1,046,834	5,166,692	1,295,717	1,223,152	839,590	71,084,292	29.7	5.8

[8] There are two approaches for the calculation of the general average premium. A first approach uses the reserve at the valuation date (and the investment income thereon) so that the application of the GAP during the whole projection period would lead to a zero reserve at the end of 50 years. In that case, the value of the initial reserve, plus the present value of contribution (at the GAP rate) and investment income over the next 50 years is put equal the present value of benefit and administrative expenditures over the same period. Under the second approach, the initial reserve (and the investment income thereon) is not used in the calculation, so that the GAP represents the actual constant contribution rate that would preserve (over the projection period) the reserve ratio observed at the valuation date. The second approach is used in this report.

Chart 3.3 Projected cost rates (as percentage of insurable earnings), 2010-2060

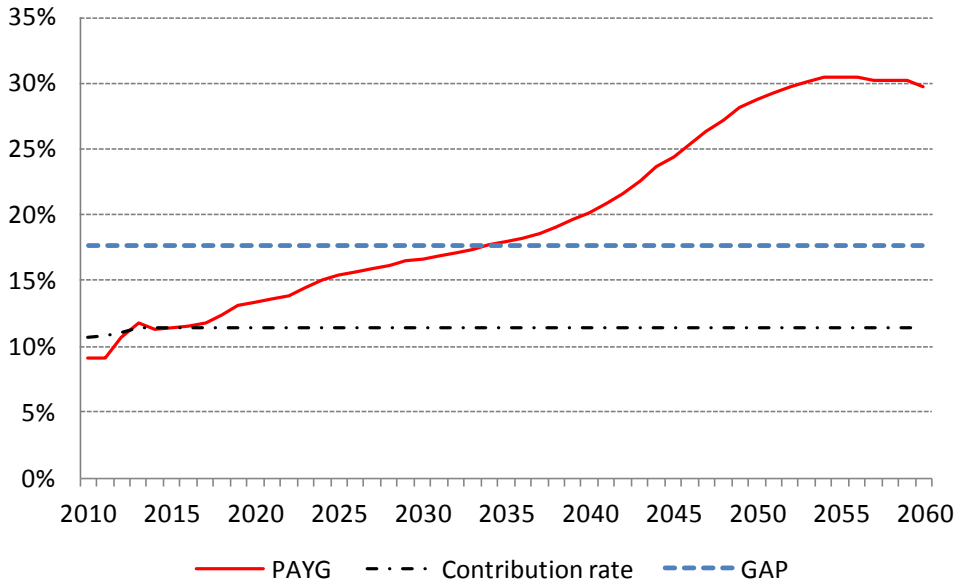


Table 3.7 Projected revenue, expenditure and assets, 2010-2060 (thousand TT$)

Year	Revenue			Expenditure			Assets	
	Contribution income	Investment income	Total	Benefits	Administrative expenses	Total	Year-end	Number of times current year's expenditure
2010-11	2,723,094	2,066,164	4,789,258	2,295,500	128,465	2,423,965	20,894,704	8.6
2011-12	3,085,507	1,777,633	4,863,140	2,848,043	136,163	2,984,205	22,738,900	7.6
2012-13	3,653,223	1,927,111	5,580,334	3,643,286	143,955	3,787,241	24,531,993	6.5
2013-14	4,127,285	2,087,735	6,215,020	3,915,844	152,245	4,068,089	26,678,924	6.6
2014-15	4,277,697	2,267,317	6,545,014	4,126,312	160,605	4,286,917	28,937,021	6.8
2015-16	4,417,984	2,428,082	6,846,067	4,311,544	169,000	4,480,544	31,302,543	7.0
2016-17	4,540,089	2,529,748	7,069,837	4,504,865	177,387	4,682,252	33,690,128	7.2
2017-18	5,075,857	2,643,444	7,719,301	5,347,763	185,722	5,533,485	35,875,944	6.5
2018-19	5,577,294	2,695,184	8,272,478	6,209,333	193,958	6,403,291	37,745,130	5.9
2019-20	5,703,285	2,720,641	8,423,927	6,453,378	202,047	6,655,425	39,513,633	5.9
2024-25	7,043,135	2,989,261	10,032,396	9,251,620	243,473	9,495,093	45,085,903	4.7
2029-30	8,727,045	2,936,513	11,663,558	12,407,212	293,024	12,700,236	43,508,072	3.4
2034-35	10,866,124	2,146,409	13,012,532	16,759,214	352,652	17,111,866	30,130,907	1.8
2039-40	13,286,484	-82,277	13,204,207	23,043,932	424,423	23,468,354	-6,365,634	-0.3
2049-50	18,410,004	-16,448,254	1,961,750	45,711,689	614,633	46,326,322	-268,786,908	-5.8
2059-60	27,265,424	-65,535,501	-38,270,077	70,244,702	890,018	71,134,720	-1,037,260,023	-14.6

3.4 Reconciliation with the results of the 7th Actuarial Review

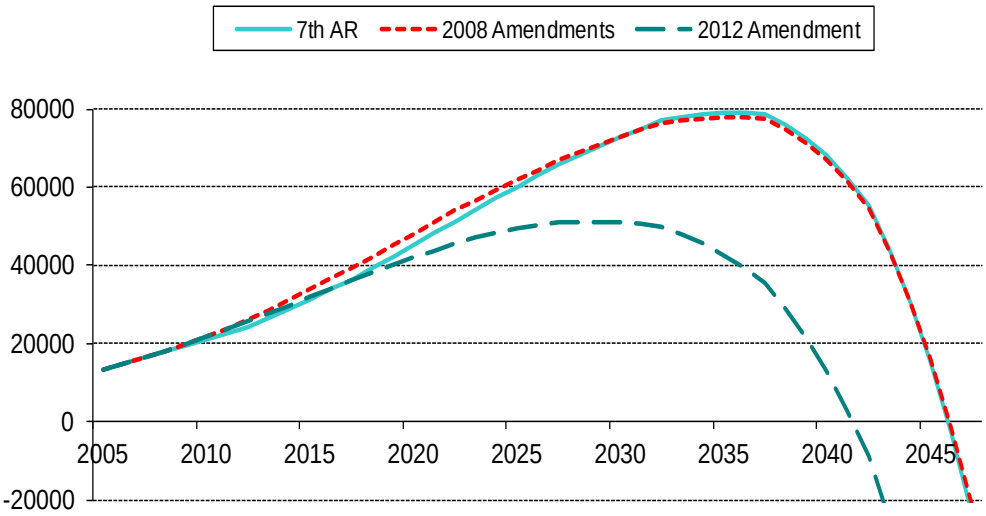
According to the 7th Actuarial Review, NIS assets would increase until 2035-36 and then start to decrease, as shown in Chart 3.4. On the basis of the last review, the fund would be depleted in financial year 2045-46.

Amendments to the system

Two series of amendments have modified fund projections since the 7th Actuarial Review. First, as mentioned in Section 1.1, the actual legislative changes adopted in 2008 were not identical to the recommendations of the 7th Actuarial Review. In particular, the base scenario of the 7th Actuarial Review did not include the contribution rate increases, it was assuming that the minimum retirement pension of TT$2,000 would increase linearly to TT$2,500 for the highest earnings' class (while in reality the adopted minimum pension was the same for all pensioners at TT$2,000), and it was assuming that the minimum pension would be frozen at its 2008 level in the future instead of being indexed every five years like the other parameters of the system. Globally, these differences have caused an increase of the general average premium from 13.8 percent to 15.1 percent, but did not affect the year of reserve exhaustion (see Table 3.9).

Second, the minimum pension was increased at TT$3,000 in February 2012. This modification has caused an increase of the general average premium from 15.1 percent to 15.9 percent and has shortened the period before reserve exhaustion by four years.

Chart 3.4 Evolution of NIS fund projections since the 7th Actuarial Review, considering amendments to the system during the period 2005-2010 (billion TT$)



Experience of the period 2005-2010

Investment return. Lower than expected investment earnings during the period from 1 July 2005 to 30 June 2010 have slowed the fund increase and have shortened the period before reserve exhaustion by another three years.

Adjustment of pensions in payment and MIE in 2013 following inflation and wage increase over the past five years. As mentioned earlier, under the base scenario, pensions in payment and fixed-parameters of the system are increased in January 2013 by a percentage equal to the increase of the CPI over the period from July 2005 to June 2010, and the MIE is increased in January 2013 at twice the national average wage. Table 3.8 presents the difference between the 7th and the 8th Actuarial Reviews concerning the assumptions used for adjusting those parameters in 2013.

Table 3.8 Comparison of assumptions concerning projected pensions and MIE increases in 2013

Year	Increase of the CPI		Assumed increase of the average national wage	
	Assumed in the 7th Review	Experience used for the 8th Review	7th Review	8th Review
2005-06	6.7%	7.6%	15.1%	
2006-07	5.8%	8.1%	10.2%	
2007-08	4.9%	10.0%	9.5%	
2008-09	4.7%	9.5%	8.9%	
2009-10	4.4%	8.8%	8.3%	11.4% *
2011				7.3%
2012				5.6%
2013				6.7%
Total	**29.4%**	**52.3%**	**63.8%**	**34.6%**

* Calendar year 2010

Concerning pension increases, in the 8th Actuarial Review, pensions in payment are assumed to increase by 52.3 percent in 2013 (compared to a previous assumption of 29.4 percent), reflecting the significantly higher inflation observed during the period 2005-2010. The minimum retirement pension was increased by 50 percent (instead of 52.3 percent) and was established at TT$3,000, in line with the legislative change of February 2012.

Concerning the increase of the MIE, in the 8th Actuarial Review, the projected increase of the MIE in 2013 (TT$11,800 per month) is calculated as twice the average national wage observed in 2009, projected in 2013 using the assumed general wage increase for the period 2009-2013, in line with the macroeconomic framework described in Section 2. In the previous valuation, the adjustment of the MIE in 2013 was calculated as twice the average wage in 2007-2008, projected in 2013 using the observed wage increases during the period 2005-2010, leading to a MIE of TT$13,600 per month. There was thus, in the previous valuation, a time lag

in the period used for the adjustment, hence the high wage increases of the period 2005-2007 (experienced before the calculated 2007-2008 average wage) were influencing the level of the projected MIE in 2013. It is considered that the new method will better reflect the actual level of the average wage at the moment the increase of the MIE actually takes place.

The global impact of these differences is a global increase in costs since pensions are adjusted in 2013 by a factor larger than anticipated and, at the same time, total insurable earnings will not increase as much as projected under the previous valuation. These factors have the effect of increasing the general average premium by 1.1 percent and of shortening the period before reserve exhaustion by 4 years (see Table 3.9).

The present system provides for an adjustment of past pension rights based on the CPI index and is based on the premise that wages normally increase faster than inflation. In the context of the present earnings class system, an indexing of pension rates lower than the increase of the MIE will prevent a full recognition of past pension rights for persons in the highest earnings classes (Appendix 6 presents recommended pension rates based on a 52.3 percent pension increase with a MIE of TT$11,800). This is an argument for the modification of the present earnings class system (see Section 4.2).

Furthermore, at the moment of determination of the 2004 and 2008 earnings class conversion tables, the choice has been made to reflect the full CPI increase observed over the previous five years. This was in a context of inflation levels lower than what has been observed during the period 2005-2010. In the case of the determination of conversion tables for the period 2013-2017, the full recognition of the 52.3 percent CPI increase from July 2005 to June 2010 puts a disproportionate weight on recent earnings (particularly on 2011 and 2012 earnings) for the determination of the average earnings class of an individual, and exacerbates the problem of a system that adjusts its parameters only every five years. It has however been decided to stand with the usual practice, considering that the existence of the minimum pension will reduce this impact on new calculated pensions, and also considering that there is a strong intention to move to a career-average indexed-earnings formula under which appropriate adjustments could be introduced to avoid this unwarranted impact. The cost estimates presented under the base scenario are done on that basis.

Modification of assumptions

A series of modifications have been introduced in the methods and assumptions in the 8th Actuarial Review:

- Projected wage increases for the period 2011-2021 are slightly higher in the 8th Actuarial Review.
- The long-term nominal rate of return of the fund has been reduced from 7.0% to 6.9%.
- Retirement rates have been refined in order to better take into account the age of insured persons on a financial year basis.

– Eligibility rates to widowers' pensions and number of eligible children have been revised on the basis of recent experience.

– The incidence of sickness benefits, according to sex, has been revised on the basis of recent experience.

– The incidence and average amounts of disablement pensions and grants have been revised on the basis of recent experience.

These factors had the effect of reducing the general average premium by 0.9 percent and have extended the period before reserve exhaustion by 5 years (see Table 3.9).

Table 3.9 Reconciliation of the 7th and 8th Actuarial Reviews

	Pay-as-you-go rate			General average premium	Year of reserve exhaustion
	2014-15	2034-35	2054-55		
According to the 7th Actuarial Review	**9.0%**	**15.0%**	**28.8%**	**13.8%**	**2045-46**
Amendments to the system					
• **2008** (differences with initial projections)	+ 1.3%	+ 1.6%	+ 0.9%	+ 1.3%	–
— Contribution rate increases					
— Flat instead of modulated minimum retirement pension					
— Systematic increase of the minimum pension at 5-year intervals in the future instead of a freeze at the 2008 level					
• **2012**	+ 1.2%	+ 0.8%	+ 0.5%	+ 0.8%	- 4 years
— Increase of the minimum pension at TT$3,000					
Experience of the period 2005-2010					
— Investment return lower than expected	–	–	–	–	- 3 years
– Inflation and wage increases for the period 2005-10 affecting the 2013 adjustment of pensions and MIE	+ 1.0%	+ 1.0%	- 0.1%	+ 1.1%	- 4 years
Modification of assumptions	- 1.1%	- 0.4%	+ 0.4%	- 0.9%	+ 5 years
Change in period used for the calculation of GAP (2011-2060 versus 2006-2055)	–	–	–	+ 1.5%	–
According to the 8th Actuarial Review	**11.4%**	**18.0%**	**30.5%**	**17.6%**	**2039-40**

3.5 Actuarial liability

For the purpose of this valuation, actuarial liability refers to the present value, as of the valuation date, of future payments related to pensions-in-payment and to the accrued rights of the present participants.

Table 3.10 shows the actuarial liability related to pensions-in-payment at the valuation date. It also presents the relationship between the actuarial liability and the annual benefit expenditure (2009-2010). Results indicate that, for all three branches, the value of total funds held at the valuation date does not cover the actuarial liability related to pensions in payment.

Table 3.10 Actuarial liability related to pensions in payment on the valuation date (million TT$)

	Long-term benefits	Short-term benefits	Employment injury benefits
A. Actuarial liability related to pensions in payment	23,128	302	647
B. Annual benefit expenditure	1,983	145	52
Ratio (A / B)	11.7	2.1	12.5
Funds as at 30 June 2010	17,668	289	517

An additional actuarial liability is also determined in relation to the accrued rights of the present insured persons. For this purpose, the following approach is used:

- **Long-term benefits**. The actuarial liability refers to the value of pensions accrued at the valuation date. It is supposed that the amount of pensions accrued at the valuation date will be indexed based on CPI after the valuation date. The minimum retirement pension is not considered.
- **Short-term benefits**. The actuarial liability refers to the value of sickness and maternity benefit payments that relate to events that occur after the valuation date, but for which the right was vested at the valuation date.
- **Employment injury benefits**. The actuarial liability refers to the value of future benefit payments that relate to accidents that occurred before the valuation date.

This part of the actuarial liability is subject to uncertainty and unavoidable arbitrariness in the case of long-term benefits. In addition, given that this perspective of the actuarial review is considered secondary in relation to the financial projections presented, data collection and methodology are not as refined as for the rest of the valuation process. Consequently, certain approximations are involved and the estimation error is more significant. Nevertheless, it is considered that the results presented in Table 3.11 are valuable for the present exercise.

Table 3.11 Total actuarial liability on the valuation date (million TT$)

	Long-term benefits	Short-term benefits	Employment injury benefits
Actuarial liability	49,320	312	1,055
Ratio of accrued liabilities to annual benefit expenditure	24.9	2.2	20.4

It can be observed from Table 3.11 that the actuarial liability of the Long-term branch represents 24.9 times of the annual expenditure. In the case of Short-term and Employment injury benefits, the respective ratios are 2.2 and 20.4. These ratios may be compared to the present reserve objectives of 2.0 in the case of Short-term benefits and 10.0 in the case of Employment injury benefits.

Though the estimation of the actuarial liability is interesting for various purposes, they do not necessarily represent the target assets that should maintained for each branch. Other considerations must also be taken into account. The determination of the contribution rate and the method of calculation of reserves must be established together.

Recommendation

Reserve objectives to be maintained for each fund should continue to be established as follows:

- Short-term: 2 times the annual benefit expenditure
- Employment injury: 10 times the annual benefit expenditure
- Long-term: the remaining excess of income over expenditure

3.6 Sensitivity analysis

Projections include an extensive set of demographic, economic and system-specific assumptions. Actual experience will inevitably differ from the projections. This section analyses two series of alternative assumptions regarding (1) the real wage increase and (2) the investment yield. The impact of alternative scenarios is presented on the GAP and on the year of reserve exhaustion.

Sensitivity of real wage increase

The results of the valuation are very sensitive to the difference between the assumed future average wage increase and the inflation rate (the real wage increase). Under the base scenario, the real wage increase is 1.5 percent. The sensitivity test assumes a 1.0 percent real wage increase. Under the sensitivity test, the GAP increases from 17.6 percent to 18.6 percent and the reserve is depleted two years earlier.

Table 3.12 Sensitivity test on real wage increase

Scenario	GAP (% of insurable earnings)	Year of reserve exhaustion
Base scenario (real wage increase of 1.5%)	17.6%	2039-40
Sensitivity test (real wage increase of 1.0%)	18.6%	2037-38

Sensitivity of investment yield

The base scenario assumes a nominal investment yield of 6.9 percent. Sensitivity test have been performed by assuming a yield of 1 percent higher and 1 percent lower than the base scenario. Under the lower yield test, the GAP increases to 18.4 percent and the reserve is exhausted two years earlier. Under the higher yield test, the GAP decreases to 16.9 percent and the reserve is exhausted three years later.

Table 3.13 Sensitivity test on investment yield

Scenario	GAP (% of insurable earnings)	Year of reserve exhaustion
Sensitivity test # 1 (yield of 5.9%)	18.4%	2036-37
Base scenario (yield of 6.9%)	**17.6%**	**2039-40**
Sensitivity test # 2 (yield of 7.9%)	16.9%	2042-43

3.7 Future contribution rate increases

On the basis of this actuarial review and the observations of this section, it is recommended to gradually increase the contribution rate. One possible schedule of contribution rate increases is presented in Table 3.14. First, the contribution rate should be increased to 12 percent from January 2013 to face the PAYG cost of the system over the period 2013-2017. Thereafter, there is a need to plan for long-term contribution rate increases. The illustrated schedule supposes a constant contribution rate during successive periods of 20 years, starting in 2021, so that the reserve ratio is equivalent to the one resulting from the application of a GAP rate of 17.8 percent during the whole projection period. As can be seen, financial sustainability would require substantial increases of the contribution rates if the system's provisions are not modified. The steps illustrated in Table 3.14 are for illustrative purposes only.

Table 3.14 Illustration of a possible contribution rate schedule (all branches combined)

Period	Contribution rate
2013 to 2017	12%
2018 to 2020	15%
2021 to 2040	17%
2041 to 2060	25%

Until the next actuarial review, it is recommended to keep the same contribution allocation by branch as the one that is presently applied: 89 percent to the Long-term branch, 6 percent to the Short-term branch and 5 percent to the Employment injury branch.

Recommendation

The total contribution rate for salaried workers should be increased to 12.0 percent for the period January 2013 to December 2017. Contribution income should be allocated to the three benefit funds according to the following proportions:

- Long-term fund: 89 per cent
- Short-term fund: 6 per cent
- Employment injury fund: 5 per cent

The pay-as-you-go cost rate at the end of the projection period in 2060 is considered unsustainable at 30 per cent of insurable earnings. It is recommended to adopt reforms, either by way of increasing contribution income and/or reducing benefit promises, in order to ensure the long-term financial sustainability of the NIS. Particular consideration should be given to the development of a strategy for gradually increasing the contribution rate over the next three decades whilst favouring the gradual increase of the retirement age.

4. Financial impact of proposed modifications

This section discusses various modifications that are being envisaged to the NIS. It presents the financial implications of these modifications and, where appropriate, their effects on contributors and beneficiaries of the system.

4.1 Increase of the maximum insurable earnings

Recent actuarial reviews have recommended to establish the MIE at two times the averages national wage. Actuarial reviews (and this is the current practice) also assume that the MIE will be adjusted every five years in the future in order to keep this same relationship between the MIE and the national average wage.

There is a need to immediately increase the MIE in order for the NIS to keep its relevance. In addition, the adjustment of the MIE should be more frequent than at five-year intervals, since the present practice causes:

- important contributions shifts every time the MIE is adjusted;
- delays between actual wage increases and its NIS recognition, thus depriving the system from important contribution revenue during that time interval.

For 2009, we may compare the insurable earnings of NIS insured persons, the total earnings of insured persons and the average national wage of salaried workers, as shown in Table 4.1. It must be noted that the average wage of all salaried workers in the economy is lower than the average insurable earnings of NIS contributors because the NIS covers only workers earning more than TT$120 per week (or TT$520 per month).

Table 4.1 Comparison of average earnings under different basis in 2009 (TT$)

	NIS insured persons		Average monthly wage of all salaried workers in the economy
	Average monthly insurable earnings	Average monthly total earnings	
Male	6,069	8,950	5,395
Female	4,842	6,435	4,401
Total	**5,477**	**7,735**	**4,946**

Source: NIBTT, CSO and authors' calculations

In 2010, 34 percent of NIS insured persons have contributed in earnings class XVI, meaning that one third of contributors do not have their earnings fully recognized under the NIS. In fact, Table 4.1 shows that the NIS presently covers 71 percent of the total wage of the average contributor (or, alternatively, the NIS covers 71 percent of the total wage base of its contributors).

If the intention is that the MIE should cover 80 to 85 percent of total wage base of the insured workers, then the MIE would have to be increased, in 2013, to a level ranging between TT$14,000 and TT$16,000.[9] On the other hand, considering the intention of the government to extend coverage to self-employed persons, the same objective applied to the total workforce (salaried plus self-employed) would lead to a lower MIE. Alternatively, if we apply the present practice of establishing the MIE at a level equivalent to twice the average national wage, the MIE would be set at TT$11,800 per month in 2013. A MIE of TT$10,000 would be a little lower than the targets mentioned above, but still appropriate in the present NIS context, as long as it is regularly and frequently adjusted in the future.

Options

Three options are analysed in this section. The first two options were suggested as part of the terms of reference of this review. Option 3 is more in line with the current practice.

- Under option 1, the MIE would be increased to TT$10,000 in 2013, TT$12,000 in 2014 and increasing by TT$1,000 per year thereafter until 2020. Annual adjustments of the MIE after 2020 would be based on a general wage index.

- Under option 2, the MIE would be increased to TT$10,000 in 2013 and by TT$1,000 per year thereafter until 2015. From 2016, it would be set at three times the average national wage. It must be noted that this option causes an important jump of the MIE in 2016.

- Under option 3, the MIE would be increased to TT$11,800 in 2013 and adjusted annually thereafter using a general wage index.

Table 4.2 Future evolution of maximum insurable earnings under different options (TT$)

Year	Base scenario	Option 1	Option 2	Option 3
2013	11,800	10,000	10,000	11,800
2014	11,800	12,000	11,000	12,500
2015	11,800	13,000	12,000	13,300
2016	11,800	14,000	21,200	14,100
2017	11,800	15,000	22,400	14,900
2018	15,800	16,000	23,600	15,700
2019	15,800	17,000	24,800	16,600
2020	15,800	18,000	26,100	17,400

[9] The Public Service Association considers that a NIS ceiling of TT$15,000 would be appropriate, considering that the maximum salary of the civil service is around TT$16,000. However, a MIE at TT$15,000 would cover more than the 85 percent of the wage base of this group of workers.

Financial implications

Under Options 1 and 3, the increase of the MIE is not significantly different from the general trend of MIE increases assumed for the base scenario of the valuation. The main difference is the application of a five-year adjustment in the base scenario compared to annual adjustments under the alternative options (annual adjustments precede cumulative adjustments under the five-year base scenario). Option 2 brings significant cost reductions because of the sharp increase of the MIE in 2016. The increase of the MIE has an immediate positive effect on contribution income, while the impact on benefit expenditures is delayed.

Table 4.3 Financial implications of the increase of the maximum insurable earnings under different options

Indicator	Base scenario	Option 1	Option 2	Option 3
General average premium	17.6%	17.3%	16.4%	17.3%
Year of reserve exhaustion	2039-40	2041-42	2044-45	2041-42

4.2 Conversion of the retirement pension formula: from an earnings class system into a system based on a percentage of earnings

It is the intention to move from the present earnings class system to a career-average indexed-earnings formula for the calculation of pensions. This section presents criteria to be considered in the choice of a formula and also presents the financial implications of different proposals.

Criteria for the implementation of a new pension formula

In reviewing the NIS pension formula, the following objectives are pursued:

- The reform should simplify the administration.
- It should make the NIS pension more pertinent and equitable. It is not a requirement that the new formula exactly reproduces the replacement rates of the present system.
- The reform should be cost neutral.
- The equivalence between the old and the new formula (as measured in 2010) should continue to stand in the long-term.
- The attention should be focused on classes of earnings V and over. The minimum pension is there to stay for some time, and it can take care of persons standing in the lowest earnings classes.
- Even if the present condition to be eligible to the retirement pension is to have contributed for a minimum of 15 years, the formula should allow the possibility to pay pensions to persons with less than 15 years of contribution (but without paying them a full minimum pension).

– At the same time, the formula should encourage participation to the NIS and try to be more advantageous for persons with long contribution histories.

– The new formula should seek to reduce the importance of the minimum pension, even if it is expected that the minimum pension will still be there for some time. It may be the opportunity to question the existence of a minimum pension for retirees between the ages of 60 and 65.

– A transition period between the present and the new formula will have to be designed so that new retirees will not be significantly affected in the short run.

Description of possible formulas

Under the new formula, contributions made each year are taken into account and equal weight is given to the earnings of each year, with older earnings revalued (or indexed) to bring them to a current value. The proposed method would work as follows:

a) obtain the amount of insured earnings for each contribution period;

b) using a cumulative wage index, adjust each insured earnings so that it is revalued to current dollars;

c) calculate the average revalued earnings;

d) apply the chosen pension rate to the average revalued earnings.

The pension rate selected will depend on (1) the replacement rate desirable for those with a full career, (2) the weight to be placed on the earlier years of the career versus later year and (3) the weight to be placed on low versus high earnings.

1. Reproduction of the present pension formula

Example: 2 percent for the first 15 years of contribution plus 1.1 percent for each year over 15

– This formula reproduces precisely the present formula for the earnings classes V and above, independently of the number of years of contribution.

– It represents the option that meets directly the objective of reducing the administration burden inherent in the present earnings class system without trying to reach any objective of redistribution of income or further simplification of the formula itself.

– With this formula, there is a need to maintain the minimum pension for the lowest earnings classes. However, with a partial indexing of the minimum pension (lower than CPI), the relative importance of the minimum pension (compared to emerging new pensions) would decrease over time.

2. **Fixed-rate per year of contribution**

   Example: 1.6 percent per year

   - This represents an option aiming directly at simplifying the pension formula. The single accrual rate applicable to all years of contribution is easy to understand and communicate.
   - It is more advantageous than the present formula for persons with long contribution histories, but less advantageous for shorter careers. Such a formula would encourage participation to the NIS.
   - With this formula, there is a need to maintain the minimum pension for the lowest earnings classes. However, with a partial indexing of the minimum pension (lower than CPI), the relative importance of the minimum pension (compared to emerging new pensions) would decrease over time.

3. **Redistributive formula putting more weight on low earnings**

   Example: 1.8 percent per year for earnings below TT$4,150 (50 percent of the MIE) plus 1.2 percent per year for earnings above TT$4,150

   - This formula provides the same replacement rate as Option 2 for persons at the MIE, but is more generous for persons with low earnings.
   - The formula would accomplish some form of income redistribution by weighting the pension in favour of persons with lower earnings. Among the three formulas presented here, it represents the one that is closer to the present formula for persons with low earnings.
   - This is the most appropriate formula in the context of an eventual elimination of the minimum pension.
   - The threshold of TT$4,150 would be adjusted automatically at each increase of the MIE.

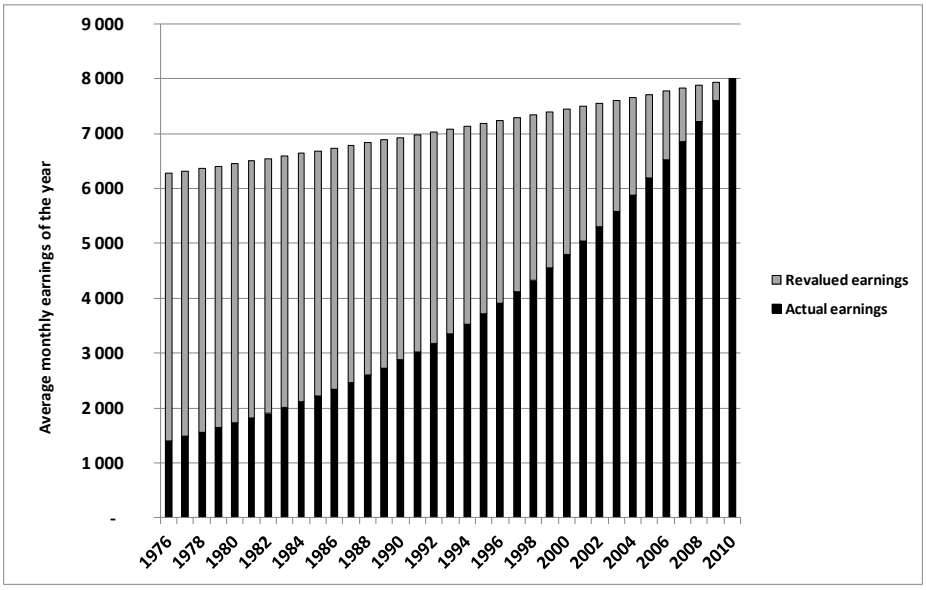
Appendix 5 presents a comparison of pension amounts resulting from the application of the different formulas.

Illustration

An example is presented here of the application of the career-average indexed-earnings formula to the case of Formula 3 described above. In the example, the person has contributed to the NIS for 35 years (from 1976 to 2010) and had average monthly insurable earnings of TT$8,000 in 2010. During his/her career, the earnings of the insured person increased at a rate of 5.25 percent per year, while the national average wage increased by 4.5 percent per year.

The first step consists in adjusting past insurable earnings of the person. Chart 4.1 illustrates how past earnings would be adjusted in order to give them a 2010 value. To operate this revaluation, all monthly earnings of the career of the individual would be multiplied by the ratio of the MIE of the year of retirement to the MIE of the year during which the earnings were actually earned.

Chart 4.1 New pension formula – Revaluation of past earnings



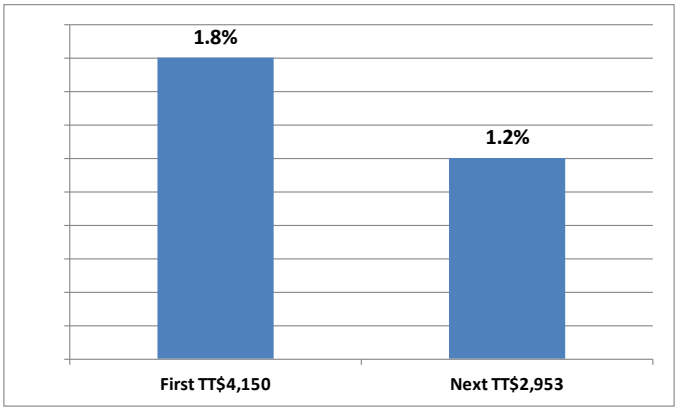
The second step is the calculation of average revalued career earnings. The sum of monthly revalued earnings of the whole career is then divided by the total number of months of contribution. In our example, the average career monthly earnings is equal to TT$7,103.

The third step is the application of the pension rate to the average revalued earnings. The monthly pension is equal to 1.8 percent of average career monthly earnings below TT$4,150 plus 1.2 percent of earnings above TT$4,150, multiplied by the number of months of contribution, divided by 12. Chart 4.2 shows how the formula would be applied by earnings bands.

The monthly pension of the person would be calculated as:

(420 months of contribution) x [(1.8% x 4,150) + (1.2% x 2,953)] / 12 = 3,854.76

Chart 4.2 Pension formula No. 3 – Application of the pension rate in the case of average monthly earnings of TT$7,103



Recognition of accrued rights and transition between the old and the new system

Two possibilities may be envisaged concerning the treatment of accrued rights prior to the application of the new pension formula, their recognition under the new formula and the transition between the present and the new system.

Under a **first approach**, the annual accrual rate of the new formula would be applied to the entire contribution period (pre- and post- reform). This approach would be simple to apply and is straightforward in the case of Option 1 since this formula essentially reproduces the present NIS retirement pension calculation for earnings classes V and above. There would thus be no difference in the treatment of past and future earnings for the purpose of calculating pensions. The transition between the old and the new formula would be smooth and would not affect future retirees, in the short- and the long-term.

A **second approach** would consist in freezing the dollar amount of the accrued pension at the date of introduction of the reform and to index that amount annually with reference to a specified index. Thus the new annual accrual rate would apply only to service accomplished after the reform date. In that case, by freezing past service, new retirees would not be affected in the short-term. This approach could be applied in the case of Options 2 and 3 since the formula under those two options depart somewhat from the present retirement pension calculation and may generate winners and losers compared to the present formula. Hence the preservation of the exact accrued pension (in terms of dollars) would ensure that only contributions after the reform date would be calculated under the new rules, and this would limit the impact on current insured persons during the transition period, and particularly on new pensioners in the short-term.

We must however take into account the existence of a generous minimum pension that cannot simply be abolished by reason of the introduction of a new pension formula. Our simulations have shown that, because of the presence of this minimum pension, very few persons would be affected negatively by the application of the new pension formula, for any of the three options presented, but there would be some cases that would be affected in the case of Options 2 and 3. In that case, it

would be appropriate, at least for a certain period, to compare the pension amount of new pensioners under the old and the new formula and to grant the higher of the two pensions.

Financial implications

Table 4.4 presents cost implications for the three options presented above. It must be noted that Option 1 has a cost which is equivalent to the present system and very few people would be affected by the new formula applied to the total service of the individuals. Therefore, in the case of Option 1, there would be no need to compare, for new pensioners, the pension amount calculated under the old and the new formula and to grant the higher of the two. We expect no losers under Option 1.

The case is different under Options 2 and 3, as demonstrated by the fact that the cost of these options, when comparing the situation with and without the floor benefit (benefit calculated under old rules), is significantly different. Options 2 and 3 would make it more difficult to reach the objective of a cost neutral conversion to the new pension formula.

Table 4.4 New pension formula – Comparison of costs (salaried employees)

	GAP related to pension benefits
Base scenario (status quo)	16.32%
Option 1	
– Without floor benefit	16.30%
– With floor benefit equal to present provisions	16.33%
Option 2	
– Without floor benefit	15.95%
– With floor benefit equal to present provisions	16.47%
Option 3	
– Without floor benefit	16.11%
– With floor benefit equal to present provisions	16.69%

Another useful information is the comparison of the cost of the different options when the minimum pension is not considered. This gives a better idea of the real equivalence of formulas in the long-term. If the minimum pension is not considered, the GAP related to long-term benefits is 13.2% under the present provisions. This may be compared to:

– 13.1 percent under Option 1;
– 11.8 percent under Option 2;
– 12.1 percent under Option 3.

This shows that Option 1 is almost equivalent to the present provisions, while Options 2 and 3 would bring a gradual reduction of NIS benefits as the minimum pension would decrease in relative value.

Criteria for decision

Table 4.5 presents a comparison of the three options on the basis of the most significant criteria mentioned at the beginning of this subsection.

Table 4.5 New pension formula – Criteria for decision

	Option 1	Option 2	Option 3
Simplified administration	√	√	√ [1]
Cost neutrality	√	√ [2]	√ [2]
Maintenance of the equivalence of the old and new formulas in the long-term	√		
Encouragement to participate to the NIS (reward to longer contribution histories)		√	√
Redistribution to low earnings (reduction of the importance of the minimum pension)			√

[1] Option 3 considers two wage bands. This may require more administrative treatment than Options 1 and 2.

[2] Given that Options 2 and 3 may generate losers (and thus require a measure to assure a floor of benefit), a small cost could be associated with the conversion.

Recommendation

The present earnings class system should be converted into a career-average indexed-earnings system. The report presents three possible formulas for such a conversion and indicates a series of criteria that should be considered for their evaluation. It is recommended that the various stakeholders be consulted on those options and the suggested criteria before deciding on the most appropriate option.

Steps for implementation

The implementation of a new pension formula will require different actions:

- **Agreement on the proposed modification**. There will be a need to consult the different stakeholders (workers and employers associations) on the proposed modification, to obtain a decision of the Board of Directors of the NIBTT on the final direction and timetable for the change and to obtain an agreement in principle at the government level.

- **Institutional adjustments**. The database recording monthly earnings for each insured persons will have to be modified in order to include the information required for the application of the new formula. Personnel will have to be trained in the calculation of new pensions.

- **Establishment of the legal and regulatory framework**. The new pension formula will have to be codified in a new law. In particular, the law will specify the treatment of old and new pensioners and the recognition of accrued rights under the previous system. Regulations will include a table of historical MIE that will be used for the determination of indexed average earnings.

- **Communications**. The communication plan will be very important. For workers, there will be a need to announce the modifications a certain period in advance and to reassure them about the protection of their past accrued rights. For employers, communication will focus on the advantages of a simplification of procedures for the calculation of contributions.

These actions will have to be analysed in more detail under a separate mandate, by specialists with the appropriate expertise.

4.3 Extension of coverage to self-employed persons

Background

Although the coverage of self-employed workers is part of the Social Insurance Act No. 35 of 1971, the relevant social security provisions regulating contributions and benefits under the Act have not yet been implemented. It is assumed in this section that the application of specific provisions concerning self-employed persons (SEP) would be introduced on 1 July 2012.

The International Labour Office (ILO) has produced, in 2010, an actuarial review regarding the extension of coverage to the self-employed persons. The analysis presented in this section is consistent with the findings of the 2010 ILO report, but adapted to the basis of the 8th Actuarial Review.

Coverage of self-employed workers presents considerable inherent difficulties: irregular nature of self-employed work, heterogeneous types of work and social security needs, compliance difficult to enforce, low cash flow management problems, limited scope and lower levels of coverage, and mistrust due to governance failures in some social security systems. The extension of coverage to the SEP thus requires appropriate design and administrative measures in order to guarantee the success of this extension.

Elements to consider

NIBTT held discussions with SEP representatives on benefit design, earnings/contribution classes, financial reporting, inter-agency cooperation, information/marketing campaign, enforcement and other conditions for success.

Discussions focussed on the role of all stakeholders in the successful implementation and ongoing operations of this system. Also, during their mission in Port-of-Spain, the actuaries have met the following SEP associations: Maxi-taxis (5,000 owners and 10,000 operators), Small Tourism Accommodation Owners (20 members), Farmers (5,000 members), and Fishermen (10,000 members). The following issues were discussed.

- **Earnings basis for the calculation of contributions and benefits**. The definition of covered earnings is an issue. Many SEP have irregular earnings over the year and many self-employed jobs are seasonal. There is thus an issue concerning the equalization of earnings over the year for many SEP. Frequency of contribution payment should also be adapted to the reality of each industry. The SEP associations also mentioned that earnings for NIS coverage should be based on earnings net of expenditures.
- **Definition of self-employed status**. The employment status may be difficult to establish in some industries. For example, fishermen may be classified as self-employed or salaried (and presently few salaried fishers pay NIS contributions).
- **Definition of retirement**. Retirement is not a clear-cut event for a self-employed. For example, the owner of maxi-taxi may continue to receive income from the operation of his taxi after he retires.
- **Need for an age credit**. Some employees have moved to self-employment without having the 750 minimum contribution periods. There is thus a need for an age credit, at implementation of the system, for these persons.
- **Necessary links with SEP associations**. These associations offer services to their members. They may help in the collection of NIS contributions. Self-employed persons in many industries need a license to operate. This allows SEP associations to maintain records of their members and may represent a useful tool to ensure NIS coverage.
- **Information campaign**. There is a need to sell correctly the benefits of NIS in order to be able to attract SEP into the National Insurance System; otherwise they would resist contribution payment. Hence, information and communication is a very important aspect in the introduction of these measures.

Profile of self-employed persons

The number of self-employed persons is estimated at 130,890 in Trinidad and Tobago. They represent 23 percent of the total labour force. Among them, 30,607 are aged 50 and over. Their averaged earnings are estimated at TT$5,097 per month in 2010.

Table 4.6 Number and average earnings of self-employed persons, by age and sex (2010)*

Age	Male		Female		Total	
	Number	Average monthly earnings (TT$)	Number	Average monthly earnings (TT$)	Number	Average monthly earnings (TT$)
15-19	3,504	2,806	1,281	2,505	4,784	2,725
20-24	10,491	3,975	4,010	3,305	14,501	3,790
25-29	13,792	4,847	5,876	3,900	19,669	4,564
30-34	11,577	5,492	4,991	4,334	16,567	5,143
35-39	10,697	5,914	4,349	4,608	15,046	5,537
40-44	10,283	6,134	4,167	4,725	14,450	5,728
45-49	10,861	6,191	4,407	4,705	15,268	5,762
50-54	9,996	6,126	3,746	4,572	13,742	5,702
55-59	7,386	5,992	2,410	4,365	9,796	5,592
60-64	3,264	5,782	1,076	4,036	4,340	5,349
65-69	2,030	5,561	699	3,648	2,729	5,071
Total	**93,879**	**5,445**	**37,011**	**4,215**	**130,890**	**5,097**

* Based on 2009 CSO data, projected in 2010

Self-employed persons may be divided in two groups: those who are employers and may have staff (sole proprietors) and those who operate on their own (sole traders). Sole proprietors, who represent about one for every five SEP, are considered more likely to be operating formally and are relatively easy to identify. Sole traders can be divided in two subgroups, assumed here to be roughly of equal size, according to the degree of informality of their work activities. One subgroup is formally engaged in economic activities and the other is not. It should be possible to eventually register a large proportion of the sole proprietors, but there is high uncertainty about the capacity to register a significant proportion of the sole traders, even in the long-term.

The determination of earnings for contribution purposes will be a major administrative challenge for NIBTT. In cases where a person produces enough valid evidence for a particular level of annual earnings, such earnings shall be used in determining the contribution class. However, it is anticipated that assessment problems and/or unreliability of declared income will impede this process. In such cases, each SEP shall be assigned a minimum earning based on his or her occupation. NIBTT will generate and regularly review the minimum earnings' categories so that they correctly reflect the reality of each occupation.

Specific provisions applying to self-employed persons

Benefits offered to this group would include Long-term benefits (retirement, invalidity, survivorship) and Short-term benefits (incapacity, maternity, funeral grant). They would have access to a retirement pension from age 60 (as for salaried employees) with mandatory retirement at age 65.

They would need 750 weekly contributions to qualify for a retirement pension. Age credits (for eligibility purposes) would be granted at a rate of 50 contribution weeks

for each complete year elapsed between the age of 50 and the attained age of the person at the introduction of these measures (up to a maximum of 6 years of credit). However, to receive the age credits, the persons will have to register within twelve months of the appointed day.

Financial implications for the NIS

Despite intensive efforts of implementation, the registration of SEP will be gradual. It should increase significantly over the first five years of implementation and will slowly reach maturity over time. The coverage of the self-employed population is also dependent on the administrative capacities of the NIBTT to enforce it. It is assumed here that registration would be consistent with the administrative capacities of the NIBTT. The assumed evolution of SEP coverage rates is presented in Table 4.7.

Table 4.7 Assumed self-employed coverage rates

Year	Coverage rate
2012-13	10%
2013-14	20%
2014-15	30%
2015-16	35%
2016-17	40%
- - -	Linear increase
From 2056-57	60%

The administrative expenditures will be higher during the year of implementation. From the third year, it is assumed that these expenditures will represent 0.4 percent of total insurable earnings (see Table 4.8).

Table 4.8 Projected administrative expenditures for SEP as a percentage of total insurable earnings (2012-13 to 2016-17)

Year	2012-13	2013-14	2014-15	2015-16	2016-17
Admin. ratio	2.3%	0.7%	0.4%	0.4%	0.4%

The number of SEP pensioners will slowly increase through the projection period. By the end of the projection period, the ratio of contributors to pensioners will reach a level of 1.8, which is comparable to the ratio observed 20 years earlier in the case of salaried employees (see Table 4.9).

Table 4.9 Projected number of self-employed contributors and pensioners - Long-term benefits (2010-2060)

Year	Number of contributors	Number of pensioners				Ratio of contributors to pensioners
		Retirement	Invalidity	Survivors	Total	
Until 2011-12	0	0	0	0	0	-
2012-13	12,629	0	0	0	0	-
2013-14	25,440	79	0	14	93	273.9
2014-15	38,359	187	0	54	242	158.7
2015-16	44,981	312	5	123	440	102.2
2016-17	51,576	408	23	211	643	80.2
2017-18	52,389	520	57	314	891	58.8
2018-19	53,107	711	102	425	1,238	42.9
2019-20	53,747	907	152	539	1,598	33.6
2024-25	56,578	1,382	350	1,119	2,851	19.8
2029-30	59,864	1,694	502	1,655	3,851	15.5
2034-35	62,889	4,047	641	2,173	6,860	9.2
2039-40	64,340	9,358	746	2,812	12,916	5.0
2049-50	62,680	22,460	656	4,698	27,814	2.3
2059-60	63,440	27,907	696	7,303	35,905	1.8

Table 4.10 presents the projected number of benefit recipients for short-term benefits. The number of beneficiaries of Incapacity and Maternity benefits is relatively stable after the period of implementation. The number of Funeral grants is influenced by the population ageing.

Table 4.10 Projected number of self-employed benefit recipients - Short-term benefits (2010-2060)

Year	Incapacity benefit	Maternity benefit *	Funeral grant
Until 2011-12	0	0	0
2012-13	474	96	0
2013-14	960	194	41
2014-15	1,454	291	84
2015-16	1,713	339	126
2016-17	1,972	385	148
2017-18	2,009	386	170
2018-19	2,043	385	177
2019-20	2,072	383	182
2024-25	2,186	363	195
2029-30	2,306	351	213
2034-35	2,421	364	264
2039-40	2,485	388	369
2049-50	2,420	396	695
2059-60	2,442	386	1,172

* The number of Maternity grants is assumed equal to the number of Maternity benefit recipients.

Benefit expenditures are presented in Table 4.11. The benefits-to-earnings ratio increases very slowly but reaches a level that is significant at the end of the projection period. The ratio of benefits to expenditures for long-term benefits increases steadily over the projection period while the ratio for short-term benefits is fairly stable from 2015-16. After the first year of implementation, during which administrative costs would be higher, the total PAYG rate would slowly increase from 1.4 percent in 2013-14 to 3.5 percent in 2019-20, and will reach 25 percent from year 2053-54.

Total GAP is 9.4 percent (8.9 percent for Long-term benefits and 0.5 percent for Short-term benefits).

Table 4.11 Projected benefit expenditures, Self-employed persons (2010-2060)

Year	Benefit expenditure (million TT$)					Benefits as a % of	
	Retirement	Invalidity	Survivors	Short-term	Total	Insurable earnings	GDP
Until 2011-12	0	0	0	0	0	-	-
2012-13	0	0	0	4	4	0.7	0.00
2013-14	2	0	0	8	11	0.7	0.01
2014-15	9	0	1	13	23	0.8	0.01
2015-16	21	0	2	15	39	1.0	0.02
2016-17	40	1	4	18	62	1.3	0.03
2017-18	66	2	6	21	95	1.7	0.04
2018-19	109	4	10	24	147	2.4	0.06
2019-20	162	7	12	25	206	3.2	0.08
2024-25	442	19	31	36	528	6.0	0.17
2029-30	648	32	56	48	783	6.9	0.20
2034-35	600	51	90	62	803	5.5	0.17
2039-40	1,227	75	147	80	1,530	8.7	0.26
2049-50	4,172	104	392	114	4,782	20.8	0.57
2059-60	7,499	157	937	174	8,766	24.9	0.72

Financial projections concerning SEP are presented in this section using a contribution rate of 10.5 percent. This rate represents 89 percent of the contribution rate of salaried workers for Long-term benefits (10.0 percent) plus the expected cost of Short-term benefits (0.5 percent).

Table 4.12 reveals that the fund would be continuously increasing until 2049-50, but would then start to decrease. However, the fund would still be positive at the end of the projection period, representing 2.1 times the annual expenditure.

Table 4.12 Key moments of the future evolution of SEP assets

	Year
System's expenditure first exceeds contributions	2041-42
System's expenditure first exceeds contributions plus investment income (assets start to decrease)	2050-51
Assets are exhausted	After 2059-60

It is interesting to compare the size of the projected fund for SEP based to the projected fund for paid workers. Chart 4.1 shows that the SEP fund will reach a level (in dollar value) almost equal to the fund for salaried employees, but 25 years later. The reason why the relative value of the SEP fund reaches values closer to the fund for salaried employees, compared to the estimates of the 2010 Special SEP report, is

due to the fact that the cost of the salaried fund has increased significantly between the two valuations (the GAP has increased from 13.8 to 17.6 percent), leading to a smaller fund accumulation and an earlier fund exhaustion in the present valuation. In addition, the number of covered SEP projected in the present valuation is estimated to be 30 percent higher in the long-term than the 2010 estimates. Detailed financial projections regarding self-employed persons are presented in Table 4.13.

Chart 4.3 Comparison of fund projections (SEP versus Salaried employees)

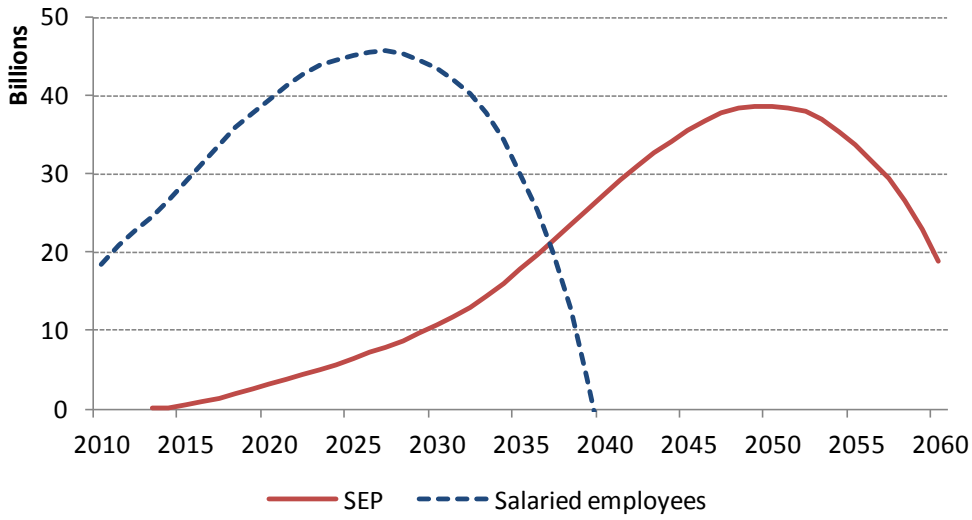


Table 4.13 Projected revenue, expenditure and assets, Self-employed persons, 2010-2060 (thousand TT$)

Year	Revenue			Expenditure			Assets	
	Contribution income	Investment income	Total	Benefits	Administrative expenses	Total	Year-end	Number of times current year's expenditure
2010-11	0	0	0	0	0	0	0	-
2011-12	0	0	0	0	0	0	0	-
2012-13	49,543	1,455	50,999	3,697	11,600	15,297	35,702	2.3
2013-14	159,532	8,858	168,390	10,919	11,600	22,519	181,573	8.1
2014-15	283,404	26,014	309,419	22,849	11,600	34,449	456,543	13.3
2015-16	389,773	52,450	442,223	39,148	14,910	54,058	844,708	15.6
2016-17	474,941	84,380	559,321	62,354	18,557	80,911	1,323,118	16.4
2017-18	557,902	121,976	679,878	95,345	20,793	116,138	1,886,858	16.2
2018-19	613,279	160,290	773,569	147,069	21,762	168,831	2,491,596	14.8
2019-20	647,379	197,164	844,543	205,574	23,248	228,822	3,107,317	13.6
2024-25	870,824	403,400	1,274,224	527,723	30,123	557,846	6,406,265	11.5
2029-30	1,138,795	679,176	1,817,971	783,387	38,165	821,552	10,680,923	13.0
2034-35	1,447,695	1,129,650	2,577,345	803,450	47,221	850,671	17,799,900	20.9
2039-40	1,758,408	1,757,895	3,516,303	1,529,594	55,858	1,585,452	27,321,115	17.2
2049-50	2,290,468	2,574,746	4,865,215	4,782,074	74,359	4,856,433	38,606,926	7.9
2059-60	3,504,909	1,391,612	4,896,521	8,765,602	110,704	8,876,306	18,874,198	2.1

SEP proposed contribution rate

In the establishment of a contribution rate specific to SEP, it is necessary to ensure that it will be sufficient to cover the financial needs of the system. If the rates are expected to evolve significantly in the future, it would be advisable to develop a plan of subsequent increases and to communicate the long-term perspectives to stakeholders. Equity among the various stakeholders must be preserved.

As the protection offered in the Long-term branch is the same as the one that is available to salaried workers, equity suggests using the same contribution rate for both salaried workers and SEP. However, the long-term financial sustainability of the fund does not necessarily require a rate that is as high as the rate for salaried workers at the onset. Indeed, the benefits-to-earnings ratio increases very slowly in the first two decades. On the one hand, SEP had the opportunity to register in the past and to accrue rights when contribution rates were lower, but they did not. On the other hand, SEP may switch during their career from one status to another. Fairness suggests that these workers should pay the same amount for the same benefits, irrespective of their status.

Concerning Short-term benefits, the cost is stable throughout the projection period. Hence, the contribution rate determined at onset is not subject to structural changes. Thus the rate for Short-term benefits should be in line with the expected cost.

On the above basis, the following recommendations are made:

- The contribution rate for Long-term benefits should be identical to that for salaried workers.
- The contribution rate for Short-term benefits should adequately cover benefit and administrative expenditures of the branch.

On that basis, the contribution rate for salaried workers for Long-term benefits would be 10.7 per cent (89 percent of the total contribution rate of 12 per cent, rounded). The expected cost of Short-term benefits is 0.5 per cent. The total SEP contribution rate would thus be 11.2 percent.

The government could consider the possibility to support part of the contributions of low-income self-employed workers. However, this support should come from outside the system, as a government subsidy.

Recommendation

The contribution rate for the SEP fund should be established at 11.2 percent (10.7 percent for Long-term benefits and 0.5 percent for Short-term benefits). Age credits for eligibility purposes should be granted at a rate of 50 contribution weeks for each complete year elapsed between the age of 50 and the attained age of the person at the introduction of these measures (up to a maximum of 6 years of credit). The government should consider the possibility to support (through a direct subsidy) part of the contributions of low-income SEP.

Application of the new pension formulas to SEP

Table 4.4 presents the cost implications of applying the new pension formulas presented in Section 4.2 to self-employed persons. Since coverage of this group is only for future service (with no need to recognize past service), there are no cost implications that could result from comparing the present and the new formula. Hence, for the SEP, no formula would lead to a cost higher than the base scenario.

Table 4.14 New pension formula – Comparison of costs (self-employed persons)

	GAP related to pension benefits
Base scenario	8.60%
Option 1 (2% for first 15 years and 1.1% after 15 years)	8.60%
Option 2 (1.6% per year)	8.58%
Option 3 (1.8% below TT$4,150 and 1.2% above TT$4,150)	8.55%

4.4 Modification of survivors' benefits

The terms of reference of this actuarial review include the assessment of four options concerning a revision of survivors' benefits.

Under **option 1**, minimum survivors' benefits would be modified as follows:

- Spouse: TT$600
- Child: TT$600
- Dependent parent (if both are alive): TT$300 each
- Dependent parents (if only one is alive): TT$600
- Orphan: TT$1,200

If these modifications are introduced in January 2013, the financial consequences will not be important since the base scenario of the actuarial review already takes into account an increase of 52.3 percent of all fixed-rate benefits at the same date. Table 4.14 shows that the GAP would increase from 17.6 to 17.8 percent and that the year of reserve exhaustion would be one year earlier than under the base scenario.

Under **option 2**, survivors' benefits would be expressed as a percentage of the greater of (1) the insured person's pension or (2) the minimum retirement pension:

- Spouse: 60%
- Child (if at least one parent is alive): 10%
- Child (if no parent is alive): 15% per child, but not exceeding 60%
- Dependant parents: 40%

If these modifications are introduced in January 2013, the GAP would increase from 17.6 to 18.6 percent and the year of reserve exhaustion would be five year earlier than under the base scenario (see Table 4.14). The important financial impact results from the fact that, in the short and medium term, survivors' pensions would be

determined with reference to the minimum pension which will be, in most cases, higher that the theoretical retirement pension.

Under **option 3**, minimum survivors' benefits would be modified as follows:

- Spouse: $1,000
- Child: $600
- Dependent parent: $600
- Orphan: $1,200

If these modifications are introduced in January 2013, the GAP would increase from 17.6 to 18.4 percent and the year of reserve exhaustion would be four year earlier than under the base scenario (see Table 4.14). The main impact results from the important increase of the minimum benefit paid to the spouse.

Under **option 4**, survivors' benefits would be expressed as a percentage of the greater of (1) the insured person's pension or (2) the minimum retirement pension:

- Spouse: 30%
- Child: 20%
- Dependant parents (per parent): 10%
- Dependant parents (if only one parent is alive): 20%
- Orphan: 40%

This option has no significant financial impact on the results of the valuation because of the decrease of the spouse's benefit which compensates for the fact that the new benefit would now be calculated with reference to the minimum pension. This option would not affect the GAP and the year of reserve exhaustion.

Table 4.15 Financial implications of modifications to survivors' benefits

Indicator	Base scenario	Option 1	Option 2	Option 3	Option 4
General average premium	17.6%	17.8%	18.6%	18.4%	17.6%
Year of reserve exhaustion	2039-40	2038-39	2034-35	2035-36	2039-40

Recommendation

Minimum survivors' benefits should be increased as follows:

- Spouse: $600
- Child: $600
- Dependent parent: $600
- Orphan: $1,200

4.5 Modification of maternity benefits

It is envisaged to extend the maximum duration of maternity benefits from 13 to 14 weeks. It may be noted that ILO Convention 183 (Maternity Protection) provides for a 14-week duration of Maternity benefits.With this modification, the GAP related to Short-term benefits would increase from 0.560 percent to 0.575 percent of insurable earnings and the total GAP of the system would increase from 17.644 percent to 17.658 percent.

Recommendation

The maximum duration of maternity benefits should be increased from 13 to 14 weeks.

4.6 Eligibility to the retirement pension

It has been asked to estimate the financial impact of a reduction from 750 to 260 weeks (from 15 to 5 years) of the period of contribution necessary to be eligible to the retirement pension. If such a modification is implemented, it would be necessary to modulate the amount of the minimum pension for persons who have less than 750 weeks of contributions. This modulation could be done on a pro rata basis, for example with the minimum pension being equal to 50 percent of the present minimum pension for persons with 10 years of contribution. Even with this modulation of the minimum pension, the modification would have an important impact on the cost of the system. The total GAP would increase from 17.6 percent to 20.4 percent and the year of reserve exhaustion would be 10 years earlier than under the base scenario (2029-30 instead of 2039-40). It must be realised that 25 percent of males and 30 percent of females who reach the first age of eligibility to the retirement pension (age 60) have a history of past NIS contributions that stands between 5 and 14 years. With the modification, these persons would become eligible to a pension instead of a grant. In addition, survivors' pensions (instead of grants) would become payable in case of death of a retirement pensioners who had between 260 and 750 weeks of contribution. If implemented, this modification should also apply to self-employed persons.

Recommendation

Conditional to the conversion of the present earnings class system into a system based on a percentage of earnings, the number of weeks of contributions required for eligibility to the retirement pension could be reduced from 750 to 260. However, for persons having paid contributions for less than 750 weeks, the minimum pension should be prorated.

4.7 Automatic adjustment of system's parameters

Different elements of the system need to be adjusted to keep their value over time: the maximum insurable earnings (MIE), minimum and maximum pension rates,

grants and pensions in payment. In the case of the NIS, these adjustments are made at five-year intervals, following the recommendations of the periodic actuarial reviews. The current practice has the following shortcomings:

- It introduces a lag between the actual increase in the cost-of-living and the adjustment of benefits. This puts pensioners behind actual cost-of-living increases.
- It makes periodic adjustments dependent on the political will to introduce them, with all the uncertainties associated with it.

If it is decided to automatically adjust the system's parameters, a decision has to be made as to the choice of the index. For benefits, the normal choice would be the CPI increase. For the maximum insurable earnings, a wage index is more appropriate since the MIE should follow the evolution of the national average wage.

It is recommended to start the application of an automatic annual adjustment of the system's parameters as soon as possible. The introduction of automatic adjustment of system's parameters would have no material effect on the financial projections presented in this report since those projections were already performed assuming future regular indexing of the system's parameters.

Recommendation

From January 2014, all system's parameters should be subject to an automatic annual adjustment. Pensions in payment and fixed-rate benefits should be adjusted based on the evolution of the CPI and the maximum insurable earnings should be adjusted according to a wage index.

4.8 Retirement age

An increase of the NIS retirement age could be justified considering the projected increase of the life expectancy in Trinidad and Tobago. With retirement presently possible at age 60 without any penalty, the average worker spends 35 years in the labour force (from age 25 to age 60) and may expect to receive a pension for approximately 20 years (from age 60 to age 80). This represents a relatively short period for financing a long period of inactivity. And with the projected increase of life expectancy, which could add 2 years of retirement over the next 50 years, the pressure will become important on the shoulders of employers and workers for financing the system.

The increase of the retirement age may also be justified by the labour force shortage that is anticipated for Trinidad and Tobago in the future, namely on account of the shrinking of the population aged 16 to 59.

Any increase of the retirement age does not have to be implemented suddenly. In most countries where such a measure has been implemented, a transition period has been introduced in order to allow people to adjust their retirement planning to the new rules.

We do not suggest here a precise scenario of retirement age increase for the NIS, but as a rule of thumb, it can be estimated that an immediate increase of two years of the minimum retirement age would reduce by 8 percent the cost of the system as measured over the next 50 years (the GAP would be reduced from 17.6 percent to 16.2 percent). The longer the transition period, the lesser the reduction of costs.

4.9 Alternative reform scenario

This section presents the financial impact of an alternative reform scenario that would spread over a certain period the principal modifications that are recommended in this report. The alternative scenario includes the following measures:

- Contribution rate at 11.7 percent in 2013 and 12.0 percent in 2015 (instead of a single increase at 12.0 percent in 2013);
- Indexing of pensions in payment in two steps, 35 percent increase in 2013 and 13 percent in 2015 (instead of a single increase of 52.3 percent in 2013);
- Increase of the maximum insurable earnings according to Option 1: TT$10,000 in 2013, TT$12,000 in 2014, increasing by TT$1,000 per year to reach TT$18,000 in 2020;
- Automatic adjustment of system's parameters from 2016 (instead of 2014).

Financial projections according to this scenario are presented in Table 4.16. Under that scenario, the GAP would be 17.5 percent and the reserve would be exhausted in 2041-42 (compared to 17.6 percent and 2039-40 respectively under the base scenario). The favourable financial impact, compared to the base scenario, is mainly due to the faster increase of the MIE.

Table 4.16 Projected revenue, expenditure and assets under an alternative reform scenario, 2010-2060 (thousand TT$)

Year	Revenue			Expenditure			Assets	
	Contribution income	Investment income	Total	Benefits	Administrative expenses	Total	Year-end	Number of times current year's expenditure
2010-11	2,723,094	2,066,164	4,789,258	2,295,500	128,465	2,423,965	20,894,704	8.6
2011-12	3,085,507	1,777,633	4,863,140	2,848,043	136,163	2,984,205	22,738,900	7.6
2012-13	3,514,420	1,922,614	5,437,034	3,610,280	143,955	3,754,236	24,421,699	6.5
2013-14	4,084,822	2,079,196	6,164,019	3,853,711	152,245	4,005,956	26,579,762	6.6
2014-15	4,581,482	2,264,017	6,845,499	4,309,417	160,605	4,470,022	28,955,239	6.5
2015-16	4,987,004	2,430,088	7,417,091	4,869,254	169,000	5,038,253	31,334,077	6.2
2016-17	5,330,737	2,531,698	7,862,435	5,310,447	177,387	5,487,834	33,708,678	6.1
2017-18	5,667,927	2,652,337	8,320,264	5,751,782	185,722	5,937,504	36,091,438	6.1
2018-19	5,996,195	2,728,634	8,724,829	6,178,961	193,958	6,372,919	38,443,347	6.0
2019-20	6,314,329	2,785,996	9,100,325	6,670,310	202,047	6,872,357	40,671,316	5.9
2024-25	7,776,269	3,245,312	11,021,581	9,391,961	243,473	9,635,433	49,349,240	5.1
2029-30	9,633,473	3,529,972	13,163,445	12,643,984	293,024	12,937,007	53,037,225	4.1
2034-35	11,993,691	3,224,999	15,218,690	17,198,687	352,652	17,551,338	47,185,288	2.7
2039-40	14,667,054	1,656,893	16,323,947	23,820,052	424,423	24,244,475	20,881,120	0.9
2049-50	20,322,258	-12,921,034	7,401,224	47,771,303	614,633	48,385,936	-214,214,231	-4.4
2059-60	30,094,976	-59,479,189	-29,384,213	73,732,681	890,018	74,622,699	-943,760,281	-12.6

5. Other issues

In addition to the analysis of modifications to the system, a certain number of issues concerning the NIS need to be considered.

5.1 Duplication of compensation in case of work injuries

Background [10]

Prior to the introduction of workers compensation programs, workers that suffered from a work related injury had little other choice than to sue their employer for their medical treatment, their loss of wages and all other physical and moral prejudices. Then again, depending on the laws in force and the jurisprudence of their case, they could receive anywhere between nothing to some form of compensation that was, in the majority of cases, nowhere near the actual pecuniary loss incurred. Apart from the generally inadequate compensation, this approach also implied certain other constraints for the injured workers:

- The burden of proof was on the worker, so there had to be enough evidence that the employer was in fault in order to hope receiving any compensation.
- Understandably, suing the employer lead to losing one's job and the perspectives of finding another, especially with residual impairment, was not easy.
- The most common (and often only) witnesses were coworkers, who would obviously be reluctant to risk their job in testifying against their own employer.
- In cases where the worker actually received some compensation, part of it had to be spent in lawyers' fees and other legal costs.

The earliest workers compensation programs introduced a compromise between employers and workers, a truce from these expensive and adversarial legal affairs. This compromise still holds today in the vast majority of workers compensation systems. On one side, workers gave up the right to sue their employer for work related injuries and in return, employers would fund a compensation system that would cover the loss of income and the cost of medical care.

The situation in Trinidad and Tobago

In Trinidad and Tobago, both social insurance and employer liability systems co-exist, making overcompensation possible in some circumstances. On one side, the social insurance system includes a branch that provides compensation to injured workers, while on the other side the Labour Law stipulates compensation to be provided by employers to their injured worker. Employers seek insurance in the private market for that risk (or may choose self-insurance). A comparison of the two systems is presented in Table 5.1.

[10] Extracts from: ILO, *Protection in case of employment injury – Background paper for the World Social Security Report* (November 2011)

Different problems may be identified within the present compensation system:

- There is a possibility of double compensation: a person may claim both Employment injury benefits under NIS and compensation under the Workmen's Compensation Act (WC Act). The two systems are not coordinated. It is understood that Article 49A of the National Insurance Act cannot be used to recover any excess payment received from the NIS when a person is also compensated by the WC Act.
- Even if it appears to exist a potential for double compensation, it is not so obvious that the total compensation of the existing two systems adequately compensate for the real long-term loss of earning capacity of injured workers.
- In case of permanent incapacity and in case of death, the WC Act provides for the payment of lump sums, while the NIS pays periodic pensions. In fact, employers who function through self-insurance are not equipped to administer long-term pensions, and for those who get insurance coverage, we may understand that insurers prefer to administer lump-sums instead of pensions, even for these long-term risks.
- The weight that is given to pure medical criteria compared to the personal characteristics of the individual (age, education, experience, possibility of rehabilitation) in the determination of the incapacity is not clear.
- It appears that only large employers have the financial capacity to buy liability insurance for work injury. Small employers, who do not want to bear the apparently high cost of those premiums, face the risk of bankruptcy in the case of large claims while, at the same time, employees bear the risk of under-compensation. There seems to exist no monitoring of the actual insurance coverage of employers for work injuries. In fact, the experience shows that it is almost impossible to manage and monitor a private compulsory employers' insurance system in the context of employment injury.
- Another awkward feature of the WC Act is that employees can sue their employer even if the employer has taken an insurance coverage.
- In principle, the present system is more expensive than it appears because it would be surprising that insurance companies could be cheaper than the NIB (in terms of administration costs) for offering similar types of benefits at similar amounts.
- EI medical expense reimbursements under the NIS are considered low. This may result from the fact that a large proportion of injured persons receive their health care from the public health system and/or that some insurance plans contracted by employers cover EI medical expenses.
- It must be noted that neither the NIS nor the Workmen's Compensation Act offer structured programs of vocational rehabilitation and work reintegration.

Table 5.1 Comparison of employment injury benefits offered by the NIS and the Workmen's Compensation Act

	National Insurance System	Workmen's Compensation Act
Temporary disablement	66⅔% of earnings, for a maximum of 52 weeks	Adult: 66⅔% of earnings, for a maximum of five years Minor: 100% of earnings before age 17 and 66⅔% thereafter, for a maximum of five years
Permanent disablement	**Total**	
	66⅔% of earnings, multiplied by the degree of disablement, payable for total duration of disablement	Lump sum: – Adult: 48 months of earnings – Minor: 96 months of earnings
	Partial	
	Lump sum equal to product of: – degree of disablement – number of weeks the disablement is expected to last (maximum 365) – 50% of average weekly earnings	Lump sum equal to the benefit paid in case of total disablement multiplied by the degree of disablement
Death	Same percentages of injury allowance as Survivors' benefits are of Retirement Pensions	Lump sum: – Total dependants: 36 months of earnings – Partial dependants: proportion of total dependant benefit, as agreed by parties or determined by Commissioner – If no dependant: burial expenses (maximum TT$500)
Medical expenses	Doctor's fees, drugs, hospital, operations, attendance allowances (maximum TT$22,500 per injury)	None

The specific role of OSHA

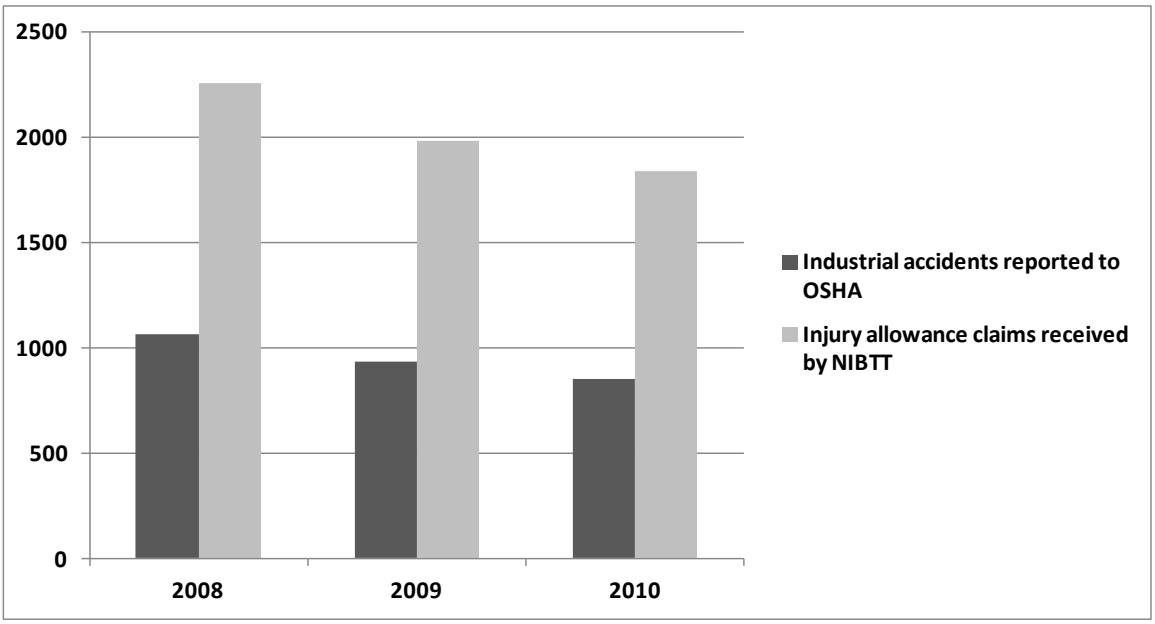
The Occupational Safety and Health Authority (OSHA) was established on 17 August 2007. It reports to the Minister of Labour. They have presently 32 inspectors who are members of a compliance unit which ensures the enforcement of the legislation. The organisation also makes prevention campaigns and has established a hotline to receive complaints from workers.

Information on accidents is provided to OSHA with the use of a special form. With this procedure, OSHA can compile data on the number of days lost because of work injuries. However, only around 1,000 accidents are reported each year to OSHA compared to 2,000 employment injury claims received annually by the NIBTT (see Chart 5.1). There is thus an important underreporting of accidents to OSHA. The

types of inspections undertaken by OSHA on work sites include routine inspections, complaints inspections, accident inspections and stakeholders request inspections.

It is not mandatory for employers to register to OSHA. They are however required to establish safety and health committees. Government agencies and ministries are also subject to the Act.

Chart 5.1 Number of industrial accidents reported to OSHA and Injury allowance claims received by NIBTT (2008-2010)



Source: OSHA (calendar year) and NIBTT (financial year)

Comments

There is a need for a better coordination between Employment injury benefits paid by the NIS and the compensation offered under the WC Act in order to avoid duplication of benefits.

One possibility would be for each incapacitated worker to choose between the two existing programs. It must be realised that the lump-sums presently paid under the WC Act are attractive to workers, who prefer the illusion of a high immediate lump-sum to the security of a long-term pension (even if the value of the lump-sum is lower). The present provisions of the WC Act are also lucrative for insurers and other intermediaries, like lawyers, who would oppose the elimination of this business. In the case the WC Act would continue to apply, there would be a need for more involvement of covered workers in the functioning of the system. In that regard, Article 24 of ILO Convention No. 121 states that: *Where the administration is not entrusted to an institution regulated by the public authorities or to a government department responsible to a legislature, representatives of the persons protected shall participate in the management, or be associated therewith in a consultative*

capacity, under prescribed conditions; national legislation may likewise decide as to the participation of representatives of employers and of the public authorities.

Another possibility, in line with the social protection point of view, would be that employment injury benefits would be paid by the NIS only. Elimination of the compensation offered under the WC Act could be an opportunity to increase benefits paid by the NIS with a corresponding increase in employers' contributions (compensated by the elimination of premiums paid by employers to comply with the WC Act). The NIS would then be in a better position to exert a complete administration of employment injury benefits, monitor information and make the necessary follow-up.

If there is no appetite for changing the current dual system and for ensuring that all employers have insurance coverage under the WC Act, then the NIBTT could offer liability insurance to employers. The NIBTT would then act as an insurer. Because such coverage would be optional, adverse selection should be expected and the rate setting process should ensure that this specific block of business would not be subsidized by the universal program. Rates would have to be differentiated by risk. An alternative optional insurance product offered by the NIBTT could be an EI benefit package that would be more generous than the current one, for example through a higher replacement rate. This package could be offered to enterprises in which there is a consensus between employers and workers to give up benefits available under the WC Act. Because this coverage would be optional, the same remark about the rate setting process would apply. This set-up could be a step towards the elimination of the liability features in the compensation of work injuries.

In any circumstances, there is a need for greater collaboration between NIBTT and OSHA on various aspects. This has been the choice of many countries to group the Safety and Health Authority, which has the responsibility of monitoring employment injuries and supporting prevention, and the Social Security system, the body that pays benefits.

An important element of the employment injury program is long-term disability, and in particular those cases of partial disability where employment injury programs around the world face most problems when trying to offer appropriate compensation and to exercise the necessary follow-up. Before taking any decision concerning the coordination of the two existing systems, it appears necessary to analyse the adequacy of compensation of injured workers with permanent disabilities. This can be achieved through a survey of the situation of workers with permanent loss of earnings capacity at different points in time after the accident. Fair compensation of permanently disabled workers requires a refined analysis of the injured workers' situation that takes into consideration their education, work experience, ability to follow a vocational rehabilitation program and capacity to occupy a suitable employment.

Recommendations

The Ministry of Finance and the Ministry of Labor should jointly investigate the extent of duplicate compensation between Employment injury benefits paid the NIS and the compensation offered under the WC Act. In addition, the NIB should undertake, in collaboration with the Ministry of Labour, the measurement of the adequacy of compensation offered to injured workers by the existing systems of compensation, particularly for persons with a permanent loss of earning capacity.

5.2 National Insurance Plan (NIP)

The objective is to offer the possibility to pay optional contributions to the NIS, beyond the requirements of the existing system (as regards the maximum insurable earnings), for the purpose of yielding enhanced retirement income.

About existing occupational pension plans

According to the Central Bank of Trinidad and Tobago[11], 196 active occupational pension plans were registered under the Insurance Act at the end of 2011. About half of those plans use deposit administration contracts and the other half is self-administered. Another six plans using annuity contracts. According to the Central Bank website, pension plan assets totaled TT$26.6 billion at the end of 2009, a sum equivalent to total NIS assets. OPPs in Trinidad do not cover only large enterprises, but also small enterprises.

Pension plans were in surplus in the 1990s. But since 2005, inflation increased, wages increased and interest rates decreased. They now face important deficits. Hence, no new OPPs were introduced over recent years. Moreover, some defined-benefit plans have been converted into defined-contribution plans.

In general, existing OPPs in Trinidad and Tobago are generous and not coordinated with the NIS. It even happens that the combined retirement income from NIS and the OPP is higher than pre-retirement earnings.

Elements to consider

In that context, one may question the appropriateness of offering a way of paying additional contributions to the NIS.

- Is there a real potential for raising optional contributions to the NIS, considering the existing coverage under occupational pension plans (OPP)?
- Do people not covered by OPPs have the financial capacity to save? Are those people in lower paid jobs?

[11] Central Bank of Trinidad and Tobago, *Financial Stability Report*, December 2011.

- The level of maximum insurable earnings under the NIS may influence the willingness of higher-paid workers to pay additional contributions to the system. A too low ceiling leaves room for additional contributions to the system. Presently, it is estimated that 34 percent of NIS contributors have part of their earnings not covered under the system because of the presence of the earnings' ceiling. However, if the MIE is increased for example at TT$ 11,800 according to Option 3 of Section 4.1, the proportion of uncovered wages would decrease to 27 percent. An immediate increase of the MIE to TT$15,000 would leave only 18 percent of the total wage base uncovered by the NIS, thus reducing the attractiveness of optional contributions to the NIS.
- Does the fiscal system provide enough tax incentives to save for retirement over and above contributions already paid to the NIS and to occupational pension plans?
- What should be the role of a public institution regarding the management of voluntary individual retirement savings accounts? It must be realised that the private sector already offers investment and savings products for people wanting to accumulate funds for retirement. The offer of savings tools by the NIS could be seen as unwarranted at a time the country may want to stimulate the private sector. The problem with savings instruments offered by banks and insurance companies is often linked to the high fees they charge for the distribution and management of these accounts. This could be an argument for the government to offer an alternative to those costly private products. Hence it would be necessary to study the investment instruments currently offered by the private sector and the level of their management fees, and then decide on the opportunity to introduce a new player in the field of retirement savings instruments. In addition, given the comments appearing in Section 5.4 concerning some weaknesses in the allocation by branch of the administrative expenditures of the NIBTT, an inappropriate costing of the administration of optional NIS contributions would provide an undue advantage to the NIBTT against the private sector.

Design features of a system of optional contributions

Type of benefits. Benefits paid from optional contributions could be of a defined-benefit (DB) or defined-contribution (DC) type. Under the DB type, optional contributions would be combined with basic NIS contributions for the application of the retirement pension formula provided by the law. This may cause problems of application for persons already affected by the MIE for whom additional contributions could not be considered. It may also give rise to anti-selection whereby persons will choose to contribute in a way to maximize the impact on their pensions, thus introducing equity issues relative to other insured persons. A capital accumulation (DC) type of plan would avoid those complications and equity issues.

Rate of return credited and investment of funds. Persons paying extra contributions to the NIS will want to receive a regular statement of their accumulated contributions and will closely look at the rate of return offered by the NIBTT on their account. It will be necessary to design an investment fund specific to the optional contributions accounts. The level of risk of such a portfolio is not easy to establish. It should normally be less risky than the funds held for regular NIS pensions which have a long-term horizon and may support more fluctuations. Financial institutions in North America have started to offer life-cycle portfolios that

provide for a level of risk that decreases with age in the case of individual savings accounts. But this would require a complete review of the way the NIS manages its investments. It is also important to know that there will be pressure from the contributors for the NIS to guarantee some minimum interest rate on optional accounts. This would have an impact on the types of securities selected. It is not sure that the NIBTT will be able to find appropriate investments in Trinidad and Tobago (or elsewhere) to operate an adequate asset-liability matching to reduce the level of risk to be supported by the institution in the case of a minimum interest rate guarantee.

Form of payment. Since those contributions are optional, some flexibility should be offered to contributors at the time of liquidation of the accumulated accounts. The best benefit to ensure periodic income until death is a life annuity. The NIBTT is equipped to pay periodic pensions and to check the survival of beneficiaries. This should thus be the privileged form of benefit payment. It may also be possible to allow the conversion of accumulated funds into a series of scheduled payments over a pre-determined period of time (e.g. 10 or 15 years). Some people have other retirement savings and may want to adapt the schedule of benefit payments to their specific income needs or tax profile. It is also possible to offer to pay all or part of the accumulated funds in the form of a lump-sum, but it must be recalled that in such a case, some people will take the wrong decision and will end-up with insufficient income later in life.

Benefits at death and invalidity. The optional system should provide for a specific treatment of accumulated funds at death or invalidity of the person. For example, the accumulated account could be paid at the inception of invalidity, or the NIBTT could offer the widow of an optional contributor to convert the accumulated funds into a periodic pension that could be added to the basic NIS widow's pension.

Recommendation

Before permitting new optional contributions in a new National Insurance Plan, it would be necessary to study the investment instruments already offered by the private sector and the level of their management fees.

5.3 Investment policy

The investment portfolio of the NIBTT has evolved over recent years as shown in Table 5.2. The asset mix has been relatively stable during the last six years. In 2011, approximately half of the portfolio is invested in fixed-income securities (government securities, corporate bonds, debentures, fixed-deposits and money market instruments). Because of the limited equity market in Trinidad and Tobago, local equities are concentrated in a small number of enterprises, hence diversification may be achieved only by investing overseas. The proportion of overseas investments in the NIBTT portfolio has increased from 4 to 16 percent of the total portfolio over the period 2006-2011. It is hoped that the legislative constraints applied to overseas investments will be relaxed, so that the NIBTT will have more flexibility to diversify its portfolio.

Table 5.2 Evolution of the NIBTT investment portfolio from 2006 to 2011

	Year					
Type of investment	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Local investments						
Fixed Deposit/Demand Deposit	4%	2%	13%	3%	9%	0%
T&T Government Securities	28%	26%	22%	24%	22%	22%
T&T Debentures / Bonds	18%	18%	16%	20%	15%	15%
Subsidary Company Bonds	5%	6%	7%	9%	9%	9%
Subsidary Company Equities	0%	0%	0%	1%	1%	1%
Subsidary Company Debentures	0%	0%	0%	1%	1%	1%
Mortgages	1%	1%	1%	0%	0%	0%
Local Equities	35%	37%	26%	26%	26%	31%
Investment properties	1%	1%	1%	1%	1%	1%
Other Equity Mutual Funds	4%	4%	4%	3%	4%	4%
Sub-Total - Local	**96%**	**96%**	**90%**	**89%**	**87%**	**84%**
Overseas investments						
Regional Equity	1%	1%	1%	0%	0%	0%
US$ Equity	2%	3%	2%	2%	2%	3%
US$ Debentures/ Bonds	1%	1%	1%	1%	1%	1%
US$ Cash	0%	0%	0%	0%	0%	0%
RBC Shares	0%	0%	7%	8%	9%	12%
Sub-Total - Overseas	**4%**	**4%**	**10%**	**11%**	**13%**	**16%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Source: NIBTT

Comments on the investment policy statement

During their mission, the actuaries received a copy of the draft *Investment Policy Statement* of the NIBTT, dated 1 December 2011. This document was raising different questions that are addressed below. However, many of the following comments were already taken into account in the new *Investment Policy Statement* dated 19 June 2012.

The asset allocation of a social security system should be established with reference to the time-horizon of the system. In the establishment of the investment policy, the evolution of future revenues and expenditures of the system should normally be presented as background to the *Investment Policy Statement* for the purpose of showing that a social security pension system has a long-term investment horizon. This information comes from the actuarial review. In the context of Trinidad and Tobago, various constraints, like the structure of the economy and the limits imposed on overseas investments, make it difficult for the NIBTT to adopt an investment policy that exactly fits these long-term objectives, but the NIBTT should keep that objective in mind and tend to it. The asset allocation should be established by taking

into account these objectives and constraints. Actuaries are often involved in this exercise by making sensitivity analysis on the fund based on various scenarios of asset allocation and they comment on the approach adopted in order to establish the level of risk and the projected return.

It is likely that the expected long-term rate of return used by actuaries for the projection of the National Insurance Fund will differ from the expected rate of return appearing in the *Investment Policy Statement*. Normally, investment managers determine their forecasts concerning rates of return based on shorter time-horizons than those made for actuarial reviews. In the actuarial review, the actuary makes a risk/return analysis and determines a long-term expected rate of return that may differ from the expected rate of return of the investment policy. The actuary must ensure the likelihood of long-term assumptions taking into account the investment policy, historical returns and governance practices. The actuary also takes into account short-term trends to ensure consistency with the other parameters of the macroeconomic framework at the basis of the valuation. Consequently, these factors may cause a difference in the projected rate of return used in the actuarial review compared with the forecasts made by the persons responsible for the establishment of the investment policy.

In addition to the general comments made above, here are some comments on the draft *Investment Policy Statement* that has been remitted to the actuaries during their mission.

- The investment policy statement should include an additional section presenting the future evolution of revenues and expenditures of the NIS, as projected according to the most recent actuarial review.
- On page 4, the document mentions that: *NIBTT's liabilities are long-term in nature as 96% are retirement related. The remaining 4% is related to short-term and employment injury benefits paid by NIS*. Considering that the Employment Injury fund exists principally to support disability and survivors' pensions which are long-term in nature, this sentence should be modified for: *NIBTT's liabilities are long-term in nature as 96% are retirement related and most of the 3% of employment injury related are pensions. Only 1% is related to short-term benefits paid by NIS*,
- The investment policy does not need to be reviewed every year. The Social Insurance Fund has a long-term horizon. Thus the general principles set out in the policy will remain valid for a certain period. The investment policy could be reviewed, for example, every three years, and could provide that it can be reviewed more frequently if particular circumstances justify. An investment strategy, on the other hand, could be reviewed more frequently, for example each year, since the investment strategy focuses more on short-term considerations.
- As regards local equities and debt securities, the limits imposed on investments in a single industry or single entity appear high and may lead to a high concentration risk.
- As regards overseas investments, the NIBTT should seek to obtain an increase of the 10 percent limit.
- The duration of the fixed-income securities portfolio could be increased, considering the long-term horizon of the fund.
- As regards the benchmark index used for overseas investments, the MSCI World Index may not be appropriate considering the nature of NIBTT's overseas investments. If those investments are mainly US-based, a US equity index would

be more appropriate. The choice of the index used for overseas investments should also consider if these investments are principally made in equity or in fixed-income securities.

Recommendation

Closer links should be established between the *Investment Policy Statement* and the actuarial review in order to adequately reflect the time-horizon of the system in the determination of the NIBTT asset allocation (taken into account in a new *Investment Policy Statement* dated June 2012). In addition, the NIBTT should continue its representations for an increase of the limit presently imposed on overseas investments.

5.4 Level of administrative expenditures

Assessment of the appropriate level of administrative expenditure for any social security systems must be based on several criteria that are necessarily based, at least in part, on judgment. Sufficient resources are necessary to provide the appropriate level of service while maintaining a reasonable cost. The type of benefits, the level of maturity of the system, the level of contributions in relation to benefits must all be considered when establishing indicators for the analysis of administrative expenditures. There is no reliable unique benchmark valuable in all circumstances. Guidelines can be inspired by comparison with other systems and genuine consideration of the differences between them. In the case of NIS, the practice of applying indexation every five years also contributes to make even more difficult any interpretation of these indicators because of the discontinuities that situation generates.

Table 5.3 shows NIBTT administrative expenditures, their year-to-year variations and various ratios established for the past five financial years.

Table 5.3 NIS administrative expenditures

	2005-06	2006-07	2007-08	2008-09	2009-10
Administrative expenditures (TT$ Million)	97	107	115	125	129
Variation with previous year		10.3%	7.5%	8.7%	3.2%
Financial data (TT$ Million)					
Contribution income	1,373	1,502	2,042	2,549	2,645
Benefit expenditure	1,001	1,037	1,517	2,066	2,191
Ratio of administrative expenditures to:					
Contribution income	7.1%	7.1%	5.6%	4.9%	4.9%
Benefit expenditure	9.7%	10.3%	7.6%	6.1%	5.9%
Expected ratio in the 7th Actuarial Review (as percentage of contribution income)	7.1%	7.0%	5.7%	4.7%	4.7%

Source: NIBTT

The Board of Directors of the NIBTT has established a limit on administrative expenditures equal to 7.5 percent of contribution income. In 2010, administrative expenditures have represented 4.9 percent of contribution income.

Analysis of the correlation between the evolution of economic variables and the NIBTT administrative expenditures does not enable the identification of a reliable indicator, even if an observation period longer than the last five years is used. For this actuarial review, it is again assumed that administrative expenditures would increase according to wage increase and price inflation in equal proportions. The most important component of administrative expenditures is wages. The other expenses are subject to various inflationary pressures. Price inflation was thus considered appropriate for these other expenses.

One can expect that administrative costs may also be subject to additional upward pressures if workload increases. Such workload may increase during the maturing phase of the system because the number of beneficiaries will grow steadily. It was assumed that productivity gains would offset this factor. The administrative costs of the Trinidad and Tobago's social security system should eventually stand at levels experienced in highest-developed countries.

Table 5.4 Comparison of administrative expenses of social security systems in different countries

Country	Year	Administrative expenses as % of	
		Contribution income	Benefit expenditure
Bahamas	2010	22.8%	21.7%
Barbados	2008	4.6%	6.7%
Belize	2009	31.9%	35.8%
Canada	2010	2.2%	2.6%
Dominica	2010	12.2%	12.8%
Saint Kitts and Nevis	2009	17.4%	31.0%
Saint Lucia	2008	10.3%	19.6%
Trinidad and Tobago	2010	4.9%	5.9%

Source: Annual reports of the various administrations

Table 5.5 presents projected administrative expenditures in terms of contribution income for the next five years if the contribution rate remains at 11.4 percent. By comparison, Canada Pension Plan's administrative expenditures have represented 2.2 per cent of contribution income in 2010 (see Table 5.4). However, one must consider that the size of Trinidad and Tobago (and of the NIS itself) may preclude the attainment of the same economies of scale as those possible in a country like Canada. It must also be mentioned that NIBTT is responsible for the administration of Short-term and Employment injury benefits. These benefits normally generate higher administrative costs than the Long-term branch. Moreover, in North American and Western European countries, they are generally not under the responsibility of the pensions' administering body.

Table 5.5 Projected NIS administrative expenditures as a percentage of contribution income (2010-2011 to 2014-2015)

	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015
Ratio	4.7%	4.4%	3.9%	3.7%	3.8%

In the NIS financial statements, administrative expenditures are allocated by branch of benefits in proportion to funds. This may not properly reflect the workload that each branch generates. In particular, it seems that the Short-term fund may not support its appropriate share of administrative expenditures. Short-term benefits do not generate a significant need for reserving, but are very demanding in terms of benefits follow-up. It is suggested to use contribution income and benefits expenditures in equal proportion to allocate administrative expenditures between branches. The basis for allocation by branch could be improved in the future if the NIBTT introduces mechanisms to precisely measure administrative expenditures for each branch.

Appendix 1 Overview of the legal provisions of the National Insurance System

This appendix provides a general overview of the key coverage, contribution and benefit provisions of the National Insurance System (NIS) as of 30 June 2010.

A1.1 Contingencies covered

These funds provide for the following benefits:

- *Long-term benefits:* Retirement pension, Invalidity pension and Survivors' pension
- *Short-term benefits:* Sickness benefit, Maternity benefit, Maternity grant and Funeral grant
- *Employment injury benefits:* Injury allowance, Disablement pension, Disablement grant, Death benefit and Medical expenses

Section 43 of the National Insurance Act establishes three funds:

- Long-term fund
- Short-term fund
- Employment injury fund

These funds are operated and managed by the National Insurance Board of Trinidad and Tobago for the purpose of providing monies required for the payment of benefits. The funds are credited with contributions paid by employers, employed people and voluntary contributors.

A1.2 Coverage

The NIS covers all employed people aged 16 to 64 who are in insurable employment. Insurable employment means any employment that is not explicitly excluded according to Section 29(2) of the National Insurance Act. Insurable employment excludes:

- People who earn less than TT$120 per week. However, a person who was employed on 29 February 2004 and continues in such employment on and after 1 March 2004 and earns less than TT$120 per week is regarded as an employed person or insured person for the purposes of the Act and such employed person pays contributions as specified in Class I.
- People employed by international organizations that are granted specific exemptions.

Employed people under the age of 16 or over the retirement age (i.e. age 65 or 60-64 if the person ceases to be engaged in insurable employment), and unpaid apprentices are covered only for employment injury benefits.

People under the age 60 who cease to be in insurable employment may elect to become voluntary contributors. Voluntary contributors may qualify only for retirement benefits, survivors' benefits and funeral grants.

A1.3 Maximum insurable earnings

On 30 June 2010, earnings covered for the purpose of determining contributions and benefits are limited to TT$1,915 per week or TT$8,300 per month.

A1.4 Financing

Contributions payable by employers and employed people are based on the earnings class of the insured person. Total contributions on behalf of an employed person represent 10.8 percent of average weekly insurable earnings (the contribution rate was increased at 11.4 percent from 2 January 2012). Contributions are shared between employer and employee in a proportion of 2 to 1. For voluntary contributions, the earnings class is determined with reference to the average weekly insurable earnings of the person over the two-year period preceding the application for voluntary contribution. The earnings classes and respective contribution rates in application on 30 June 2010 are set out in Table A1.1.

Income from contributions is allocated to the three benefit funds according to the following proportions:

- Long-term fund: 89 per cent
- Short-term fund: 6 per cent
- Employment injury fund: 5 per cent

Reserves held for each fund are established as follows:

- The Short-term fund is maintained at 2 times the annual benefit expenditure;
- The Employment injury fund is maintained at 10 times the annual benefit expenditure;
- The remaining excess of income over expenditure is allocated to the Long-term fund.

Table A1.1 Earnings classes and contributions in application on 30 June 2010 (based on a contribution rate of 10.8%)

Earnings classes	Weekly earnings	Monthly earnings	Assumed weekly earnings	Weekly contribution		Total weekly contributions	Class Z weekly contribution
				Employee	Employer		
I	120.00 – 199.99	520.00 – 866.99	160.00	5.76	11.52	17.28	1.17
II	200.00 – 269.99	867.00 – 1,169.99	235.00	8.46	16.92	25.38	1.72
III	270.00 – 359.99	1,170.00 – 1,559.99	315.00	11.34	22.68	34.02	2.30
IV	360.00 – 449.99	1,560.00 – 1,949.99	405.00	14.58	29.16	43.74	2.96
V	450.00 – 549.99	1,950.00 – 2,382.99	500.00	18.00	36.00	54.00	3.65
VI	550.00 – 659.99	2,383.00 – 2,859.99	605.00	21.78	43.56	65.34	4.42
VII	660.00 – 769.99	2,860.00 – 3,336.99	715.00	25.74	51.48	77.22	5.22
VIII	770.00 – 879.99	3,337.00 – 3,812.99	825.00	29.70	59.40	89.10	6.02
IX	880.00 – 1,009.99	3,813.00 – 4,376.99	945.00	34.02	68.04	102.06	6.90
X	1,010.00 – 1,129.99	4,377.00 – 4,896.99	1,070.00	38.52	77.04	115.56	7.81
XI	1,130.00 – 1,259.99	4,897.00 – 5,459.99	1,195.00	43.02	86.04	129.06	8.72
XII	1,260.00 – 1,399.99	5,460.00 – 6,066.99	1,330.00	47.88	95.76	143.64	9.71
XIII	1,400.00 – 1,549.99	6,067.00 – 6,716.99	1,475.00	53.10	106.20	159.30	1.77
XIV	1,550.00 – 1,719.99	6,717.00 – 7,452.99	1,635.00	58.86	117.72	176.58	11.94
XV	1,720.00 – 1,914.99	7,453.00 – 8,299.99	1,818.00	65.43	130.86	196.29	13.27
XVI	1,915.00 and over	8,300.00 and over	1,915.00	68.94	137.88	206.82	13.98

Contributions payable by an employer in respect of employment injury coverage for an employed person who has not yet attained the age of 16 years, who is in receipt of a retirement pension or who has attained the age of 65 are as set out in Class Z of the above table. For unpaid apprentices, the contribution is TT$1.00 per week.

A1.5 Benefit provisions

A1.5.1 Long-term benefits

Retirement pension

Contribution requirement: 750 weeks of contributions paid or credited.

Age requirement: Age 60 or over and retired from the workforce, or age 65 and over regardless of whether or not the person is retired.

Amount of benefit: 30% to 48% of average weekly earnings over the whole period for which contributions are paid or credited, based on the 16 earnings classes, plus 0.56% to 0.71% of average weekly earnings for each 25-week period of contributions (not including age credits) exceeding 750.

Minimum basic pension: TT$2,000 per month (increased to TT$3,000 in February 2012).

Retirement grant

Contribution requirement: Less than 750 weeks of contributions paid or credited.

Eligibility: The person is ineligible for the retirement pension.

Age requirement: Same as retirement pension.

Amount of benefit: Three times total employee and employer contributions. Min.: TT$2000

Invalidity pension

Eligibility: The insured people must have met certain contribution requirements, less than age 60, incapacity not caused by employment and have medical certification that they are likely to remain incapable of work for a period of at least 12 months.

Amount of benefit: Same as retirement pension, but not subject to the minimum pension.

Duration of pension: Payable until age of 60 (or until recovery from invalidity) and then converted to a retirement pension of the same amount whether or not 750 weeks of contributions have been paid or credited.

Survivors' pension

Eligibility: Deceased insured less than age 60, or receiving a retirement pension, or aged 60 or over entitled to receive a retirement pension as at date of death. Benefit not paid where the deceased insured would have been entitled to a Retirement grant. Death not caused by employment. A minimum of 50 weeks of contributions paid.

- Widow or widower: legal or common law spouse.
- Child: less than age 19, including an unborn child. In the case of an orphan, when only one of the deceased parents was an insured, this orphan is considered as a child.
- Orphan: less than age 19.
- Parent: wholly or mainly maintained by deceased insured.

Amount of benefit: Proportion of retirement or invalidity pension, to which the spouse/child/orphan/parent was entitled, as follows:

- Widow/widower: 60 per cent (min.: TT$400 per month)
- Child: 30 per cent (min.: TT$400 per month)
- Orphan: 60 per cent (min.: TT$800 per month)
- Parents: 30 per cent (min.: TT$200 per month)

Where one parent dies, the surviving parent receives the total amount of dependent parents benefit.

Maximum family benefit: 100 per cent

Duration of benefit:

- Widow or widower: the pension is paid for life or until remarriage.
- Child/orphan: Payable up to age 19. If the child/orphan was mentally or physically disabled before age 19, the benefit is paid until the incapacity ceases.
- Parents: the pension is paid for life or until remarriage.

Remarriage grant

Eligibility: Payable at remarriage of widow or widower.

Amount of benefit: Lump-sum equal to 52 weeks of widow/widower pension.

A1.5.2 Short-term benefits

Sickness benefit

Contribution requirement: A minimum of 10 weekly contributions in the 13 weeks immediately preceding the week in which illness began.

Eligibility: The insured person must have been in insurable employment at the time of illness and is losing earnings. Illness not caused by employment.

Amount of benefit: 60 per cent of the insured average weekly earnings over the best 10 out of the 13 weeks immediately preceding the illness, based on the 12 earnings classes.
Min.: TT$96 per week.
Max.: TT$1,149 per week.

Waiting period: Three days.

Duration of benefit: Payable for a maximum of 52 weeks.

Maternity benefit

Contribution requirement: A minimum of 10 weekly contributions in the 13 weeks immediately preceding the sixth week before the expected week of confinement.

Eligibility: The insured woman is not in insurable employment during the period of leave and pregnant for a minimum of 26 weeks or delivered a live child as certified by a medical practitioner. The benefit is not dependent upon loss of earnings.

Amount of Benefit: 60% of the insured average weekly earnings over the best 10 out of the 13 weeks immediately preceding the illness, based on the 12 earnings classes.
Min.: TT$96 per week.
Max.: TT$1,149 per week.

Duration of benefit: Payable for a maximum of 13 weeks.

Maternity grant

Eligibility: A woman who satisfies the contribution requirement for maternity benefit. Where the mother does not qualify in her own right, based on father's contributions (then named Special maternity grant). Payable for each birth in case of multiple births. Paid in addition to maternity benefit.

Amount of benefit: TT$2,500.

Funeral grant

Eligibility: Death of an insured person. The deceased insured must have made a minimum of 25 contributions or was in receipt of employment injury benefit at the time of death or would have been entitled to receive employment injury benefit but for death.

Amount of benefit: TT$5,000.

A1.5.3 Employment injury benefits

Injury allowance

Eligibility: At least one contribution paid. Incapable of work as a result of an accident arising out of insured employment, or as a result of a prescribed disease. This includes employed insured persons who are under 16 or over 65 years. The benefit is not dependent upon loss of earnings.

Amount of benefit: 66⅔% of weekly earnings related to the contributions paid for the week during which the accident occurred or the disease was diagnosed.
Min.: TT$106.84 per week.
Max.: TT$1,276.67 per week.

Duration of benefit: Payable for a maximum of 52 weeks.

Disablement pension

Eligibility: At least one contribution paid. Disablement resulting from an accident at work or a prescribed disease and the insured person is certified to be at least 20 per cent disabled.

Amount of benefit: Percentage of the amount of employment injury allowance, proportional to the degree of disability.

Duration of benefit: After injury allowance has ceased, payable for life or until disablement ceases.

Disablement grant

Eligibility:	At least one contribution paid. The insured person must be ineligible for disablement pension i.e. the insured person is certified to be less than 20 per cent disabled.
Amount of Benefit:	A lump sum equal to the product of the degree of disablement (minimum of 3 per cent) times the number of weeks it is expected that the disablement will last (maximum of 365) times 50 per cent of the average weekly earnings that would be used for injury allowance.

Death benefit

Eligibility:	At least one contribution paid. The death of an insured person in the course of insurable employment as a result of an accident or a prescribed disease.
Amount of Benefit:	Pension payable to widow, a dependent widower, a child, an orphan and dependent parents subject to similar conditions as survivors' benefits. Death benefits are the same percentages of injury allowance as survivors' benefits are of the retirement pension.

Medical expenses

Eligibility:	An insured person who incurs the cost of medical treatment for the personal injury or prescribed industrial disease arising out of insured employment.
Expenses covered:	Doctor's fees, drugs, private hospital, operations, attendance allowances.
Amount of benefit:	Maximum of TT$22,500 per injury.

A1.6 Benefit indexing

There is no automatic indexing of pensions in payment and benefit amounts. In practice, pensions in payment and benefit amounts are adjusted every five years, following the recommendations of the periodic actuarial review.

Appendix 2 Methodology of the actuarial valuation

This actuarial review makes use of the comprehensive methodology developed at the Financial, Actuarial and Statistical Services of the ILO for reviewing the long-term actuarial and financial status of national pension systems. These modelling tools include a population model, an economic model, a labour force model, a wage model, a long-term benefits model, a short-term benefits model and an employment injury model. The review has been undertaken using the version of the ILO models that were delivered to the NIBTT following the Seventh Actuarial Review of the NIS, and that the actuaries of the CIPQPE have adjusted to reflect the situation of the system as at 30 June 2010.

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

A2.1 Modelling the demographic and economic environment

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

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

General population

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

Economic growth

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

Labour force, employment and insured population

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

employment. This exercise is performed separately for salaried and self-employed persons.

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

Wages

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

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

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

A2.2 Modelling the financial development of the NIS

The present actuarial review addresses all revenue and expenditure items of the NIS. The most important components of this budget concern long-term (pension) benefits. This section focuses on them.

For Short-term benefits, income and expenditures are projected using simple projection methods based on recent experience. For Employment injury benefits, income and expenditures are projected using a model specifically developed by the ILO for that branch.

Projections for pensions are done for each sex separately. Groups of insured are separated between salaried and self-employed persons.

Purpose of pension projections

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

– assessing the options to build up a contingency or a technical reserve;

- proposing schedules of contribution rates consistent with the funding objective;
- testing how the system reacts to changing economic and demographic conditions.

Pension data and assumptions

Pension projections require the demographic and macro-economic frame already described and, in addition, a set of assumptions specific to the NIS.

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

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

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

Pension projection approach

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

Pensions are long-term benefits. Hence the financial obligations that a society accepts when adopting financing provisions and benefit provisions for them are also of a long-term nature. Participation in a pension system extends over the whole adult life, either as contributor or beneficiary, i.e. up to 70 years for someone entering the system at the age of 16, retiring at the age of 65 and dying some 20 or so years later. During their working years, contributors gradually build entitlement to pensions that will be paid even after their death, to their survivors. The objective of pension projections is not to forecast the exact development of income and expenditures of the system, but to check its financial viability. This entails evaluating the system with regard to the relative balance between future revenue and expenditure.

Appendix 3 NIS specific data and assumptions

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

A3.1 Data and assumption on the insured population

Number of insured persons

Data on the insured population were obtained from the NIBTT. The database presents a population of 488,536 insured persons who have contributed in 2009-10. In addition, to simulate the impact on the system of workers who have ceased participation but who have accumulated in the past a certain number of contribution credits, it has been assumed that the system counts 80,784 inactive insured persons. The number of inactive insured persons has been estimated from NIBTT data on persons who have already contributed to the NIS in the past, have not contributed to the system for a certain period and have not yet reached the retirement age. Those data were confronted with different simulations on the number of emerging retirement pensions which would result from the recognition of different numbers of inactive insured persons and a comparison with the retirement experience of recent years. The distribution of these insured populations, by age and sex, is shown in Table A3.1.

Table A3.1 Insured persons, by age and sex, in 2009-2010

Age	Active			Inactive		
	Male	Female	Total	Male	Female	Total
15-19	6,116	5,872	11,988	-	-	-
20-24	31,295	30,491	61,786	-	-	-
25-29	40,432	41,179	81,611	461	527	988
30-34	34,037	35,113	69,150	1,437	2,914	4,351
35-39	30,183	29,727	59,910	5,432	6,455	11,887
40-44	26,839	26,175	53,014	7,268	6,077	13,346
45-49	29,326	27,190	56,516	7,753	6,766	14,519
50-54	26,084	21,921	48,005	9,147	7,236	16,383
55-59	20,214	15,569	35,783	10,624	8,687	19,311
60-64	5,932	4,841	10,773	-	-	-
Total	**250,458**	**238,078**	**488,536**	**42,122**	**38,663**	**80,786**

The projection of the insured population is calculated by applying constant coverage rates (by age and sex) to the employed population as determined under the economic

framework. Age-specific coverage rates are assumed constant for the whole projection period. Coverage rates appearing in Table A3.2 are calculated as the ratio of insured persons to the labour force at the corresponding age.

Table A3.2 NIS coverage rates, by age and sex (2010)

Age	Male	Female
17	29%	37%
22	69%	93%
27	73%	96%
32	78%	106%
37	77%	105%
42	72%	97%
47	72%	89%
52	67%	85%
57	65%	90%
62	43%	65%
Total	**69%**	**93%**

Insurable earnings

Table A3.3 shows the average insurable earnings of active contributors in 2009-10 on a monthly basis, by age and sex. Average earnings of the insured population have been separated into three subgroups of earnings: the lowest 30 per cent, a medium range of 40 per cent and the highest 30 per cent, in order to capture the effect of the minimum pension.

Table A3.3 Average monthly insurable earnings of active contributors in 2009-10, by age and sex (TT$)

Age	Male	Female
15-19	3,045	2,601
20-24	4,981	3,871
25-29	6,103	5,048
30-34	6,428	5,411
35-39	6,558	5,394
40-44	6,514	5,158
45-49	6,420	5,005
50-54	6,427	5,003
55-59	6,286	4,949
60-64	5,816	4,156
Total	**6,110**	**4,912**

Density of contributions

Density of contribution represents the proportion of the year during which the average contributor pays contributions. Density factor by age and sex were obtained from the NIBTT. Sample density factors appear in Table A3.4.

Table A3.4 Density factors, by age and sex

Age	Male	Female
17	0.28	0.27
22	0.61	0.63
27	0.75	0.80
32	0.79	0.84
37	0.81	0.85
42	0.82	0.85
47	0.83	0.86
52	0.84	0.86
57	0.84	0.86
62	0.66	0.68
Total	**0.77**	**0.80**

Accrued past credits

A complete distribution of accrued past credits for the active and inactive insured populations was obtained from the administrative records of the NIBTT. Average data are shown in Table A3.5.

Table A3.5 Average past contribution years of insured persons, as of 30 June 2010, by age and sex

Age	Active insured persons		Inactive insured persons	
	Male	Female	Male	Female
17	1.5	1.4	1.5	1.4
22	3.2	3.1	3.2	3.1
27	4.9	4.9	4.9	4.9
32	6.1	6.1	6.1	6.1
37	7.2	7.0	7.2	7.0
42	8.7	7.8	8.7	7.8
47	11.9	10.3	11.9	10.3
52	15.7	13.2	15.7	13.2
57	18.5	15.6	18.5	15.6
62	20.5	16.9	20.5	16.9

A3.2 Demographic assumptions related to the system

Mortality of insured persons

Mortality rates for the insured population have been assumed to be equal to the mortality rates of the general population (sample mortality rates are presented in Table A3.6). Mortality rates are assumed to decline continuously during the projection period in line with the assumed increase of the average life expectancy. This mortality pattern is also used to project survivors' benefits payable on the death of insured persons or pensioners. For invalidity pensioners, it is assumed that mortality rates are equal to five times those of the general population at age 20 years, decreasing gradually to two times at age 60 years.

Table A3.6 Sample mortality rates, by age and sex (per 100)

Age	Male		Female	
	2010	2060	2010	2060
0	4.555	3.656	1.830	0.577
5	0.127	0.099	0.044	0.030
10	0.060	0.040	0.019	0.009
15	0.074	0.037	0.036	0.024
20	0.117	0.055	0.062	0.033
25	0.153	0.079	0.081	0.040
30	0.181	0.103	0.090	0.048
35	0.220	0.135	0.108	0.066
40	0.291	0.183	0.154	0.101
45	0.414	0.266	0.236	0.158
50	0.620	0.406	0.391	0.251
55	0.951	0.638	0.619	0.374
60	1.473	1.017	0.996	0.583
65	2.286	1.630	1.616	0.918
70	3.539	2.611	2.613	1.583
75	5.445	4.163	4.362	2.942
80	8.292	6.580	7.173	5.587
85	12.433	10.253	11.450	10.000
90	18.232	15.634	17.660	16.695
95	25.936	23.114	26.042	25.579
100	100.000	100.000	100.000	100.000

Invalidity incidence

Invalidity incidence rates are based on the experience of the NIS. They are assumed constant for the whole projection period. The rates are shown in Table A3.7.

Table A3.7 Rates of entry into invalidity, by age and sex

Age	Male	Female
27	0.00011	0.00011
32	0.00024	0.00020
37	0.00049	0.00039
42	0.00102	0.00074
47	0.00212	0.00142
52	0.00439	0.00270
57	0.00912	0.00516

Retirement behaviour

The first possible age of retirement under the NIS system is 60 years. The actuarial model used for the present actuarial review considers retirement as the residual element of a series of factors. The macro-economic frame described in the previous chapter provides the number of people employed each year. For a given age (at which retirement is possible under the NIS), the difference between the number of insured in two consecutive years (for two consecutive years of age) is considered to be new retirees. Resulting retirement rates appear in Table A3.8. Consistency checks are performed to reproduce the retirement pattern observed under the system.

Table A3.8 Retirement rates, by age and sex

Age	Male	Female
60	0.57	0.35
61	0.32	0.23
62	0.19	0.14
63	0.13	0.10
64	0.50	0.43
65	1.00	1.00

Family structure

Information on the family structure of the insured is necessary for the projection of survivors' benefits. Assumptions have to be established on the probability of being married at death, the average age of the spouses, the average number or children possibly eligible to an orphan's benefit and the average age of the orphans. Sample assumptions are shown in Table A3.9.

Table A3.9 Family statistics

Age	Male				Female			
	Probability of having an eligible spouse (%)	Average age of spouse	Average number of eligible children	Average age of children	Probability of having an eligible spouse (%)	Average age of spouse	Average number of eligible children	Average age of children
17	12%	17	-	-	-	17	-	-
22	23%	22	0.19	2	6%	22	0.19	1
27	33%	26	0.31	3	12%	29	0.29	4
32	41%	31	0.36	5	17%	35	0.33	6
37	48%	35	0.35	6	20%	40	0.31	8
42	53%	39	0.31	8	22%	46	0.26	10
47	56%	44	0.24	9	23%	51	0.18	12
52	59%	48	0.16	10	23%	56	0.10	13
57	60%	52	0.08	10	21%	60	0.01	14
62	59%	57	-	-	18%	65	-	-
67	57%	61	-	-	15%	69	-	-
72	54%	65	-	-	11%	74	-	-
77	49%	68	-	-	9%	78	-	-
82	42%	72	-	-	6%	83	-	-
87	34%	76	-	-	4%	87	-	-

A3.3 Other assumptions

Indexing of system's parameters and pensions in payment

Under the base scenario, the maximum insurable earnings is increased in January 2013 to be equivalent to twice the national average wage of salaried workers and is increased thereafter at five-year intervals to maintain the same relationship between the MIE and the national average wage. Pensions in payment (before the application of the minimum pension) and fixed-parameters of the system (excluding the minimum retirement pension) are increased in January 2013 by a percentage equal to the increase of the CPI over the period from July 2005 to June 2010. Thereafter, all pensions in payment and fixed-parameters of the system are increased at five-year intervals to reflect the increase of the CPI over the previous five years.

Administrative expenses

Administrative expenses are determined as the amount paid in 2009-10 increasing annually in line with the average of the wage increase and the inflation rate.

A3.4 Pensions in payment in June 2010

Table A3.10 Retirement pensions

Age	Male		Female		Total	
	Number	Average monthly pension	Number	Average monthly pension	Number	Average monthly pension
60-64	15,279	1,985	7,913	1,978	23,192	1,983
65-69	12,891	1,981	6,312	1,976	19,203	1,980
70-74	8,760	1,990	4,039	1,990	12,799	1,990
75-79	5,797	1,997	2,664	1,996	8,461	1,997
80-84	3,630	1,997	1,678	1,997	5,308	1,997
85-89	2,046	1,999	977	2,000	3,023	1,999
90-94	803	1,999	377	2,000	1,180	1,999
95-99	190	2,000	114	2,000	304	2,000
Total	**49,396**	**1,988**	**24,074**	**1,984**	**73,470**	**1,987**

Table A3.11 Widows and widowers' pensions (according to sex of dead spouse)

Age	Male		Female		Total	
	Number	Average monthly pension	Number	Average monthly pension	Number	Average monthly pension
20-24	-	-	2	403	2	403
25-29	148	582	10	534	158	579
30-34	196	571	25	597	221	574
35-39	414	523	40	534	454	524
40-44	662	505	56	477	718	502
45-49	1,243	497	88	512	1,331	498
50-54	1,782	505	126	551	1,908	508
55-59	2,185	497	127	551	2,312	500
60-64	2,749	464	129	523	2,878	467
65-69	3,344	439	123	506	3,467	441
70-74	3,516	417	90	468	3,606	419
75-79	3,277	406	68	438	3,345	406
80-84	2,595	402	59	425	2,654	402
85-89	1,555	401	32	404	1,587	401
90-94	635	400	8	410	643	400
95-99	173	399	4	400	177	399
Total	**24,474**	**445**	**987**	**505**	**25,461**	**447**

Table A3.12 Invalidity pensions

Age	Male		Female		Total	
	Number	Average monthly pension	Number	Average monthly pension	Number	Average monthly pension
20-24	1	1,229	2	1,174	3	1,192
25-29	12	1,067	11	1,011	23	1,041
30-34	39	968	30	915	69	945
35-39	63	936	41	962	104	946
40-44	146	900	96	837	242	875
45-49	381	889	235	811	616	859
50-54	719	882	372	826	1,091	863
55-59	1,571	890	678	830	2,249	872
Total	**2,932**	**891**	**1,465**	**834**	**4,397**	**872**

Table A3.13 Children, orphans and parents pensions

Age	Number	Average monthly pension
0-4	306	410
5-9	661	412
10-14	1,036	411
15-19	2,093	416
20-24	-	-
25-29	-	-
30-34	-	-
35-39	-	-
40-44	-	-
45-49	51	218
50-54	72	236
55-59	74	228
60-64	92	216
65-69	183	211
70-74	154	217
75-79	117	210
80-84	55	209
85-89	32	219
90-94	11	200
95-99	5	200
Total	**4,942**	**380**

Appendix 4 Detailed information on NIS results (1 July 2005 to 30 June 2010)

This appendix presents a detailed reconciliation of financial and demographic data of the NIS over the period 1 July 2005 to 30 June 2010.

A4.1 Reconciliation of financial results

Internal accounting procedures allow for proper monitoring of experience and of the different financing methods, consistent with the fact that each type of benefits has its specific characteristics and funding objectives. Each branch is also expected to meet its expenditures from its own income and accumulated reserves.

Table A4.1 Long-term benefits fund (Million TT$)

	2005-06	2006-07	2007-08	2008-09	2009-10
Fund at start of year	**8,341**	**8,799**	**9,116**	**13,742**	**16,657**
Contribution income	1,167	1,277	1,735	2,269	2,354
Investment income *	733	824	1,962	-13	661
Miscellaneous income	46	40	44	63	33
Transfer from Short-term and EI funds **	0	0	2,369	2,585	62
Total receipts	**1,947**	**2,141**	**6,110**	**4,904**	**3,110**
Retirement pension	699	722	1,143	1,607	1,707
Retirement grant	42	36	38	56	52
Invalidity pension	35	36	41	44	46
Survivors' pension	105	116	152	170	178
Administration expenses	93	102	110	111	116
Transfer to Accumulated reserve **	515	811	0	0	0
Total expenditure	**1,488**	**1,822**	**1,484**	**1,989**	**2,099**
Fund at year-end	**8,799**	**9,118**	**13,742**	**16,657**	**17,668**

* Includes realized and unrealized gains and losses in 2008-09 and after

** Before 2007-08, transfers from or to Accumulated Fund

Table A4.2 Short-term benefits fund (Million TT$)

	2005-06	2006-07	2007-08	2008-09	2009-10
Fund at start of year	**93**	**105**	**112**	**123**	**274**
Contribution income	124	135	184	153	159
Investment income *	8	9	24	-1	7
Miscellaneous income	1	0	1	0	0
Transfer from Accumulated reserve **	0	0	0	351	0
Total receipts	**132**	**145**	**208**	**503**	**166**
Sickness benefit	21	24	22	35	40
Maternity benefit	42	47	53	75	76
Special Maternity grant				1	2
Funeral grant	20	20	24	27	28
Administration expenses	1	1	1	8	6
Transfer to Long-term fund **	35	46	99	207	0
Total expenditure	**120**	**138**	**198**	**353**	**151**
Fund at year-end	**105**	**112**	**123**	**274**	**289**

* Includes realized and unrealized gains and losses in 2008-09 and after
** Before 2007-08, transfers from or to Accumulated Fund

Table A4.3 Employment injury benefits fund (Million TT$)

	2005-06	2006-07	2007-08	2008-09	2009-10
Fund at start of year	**284**	**301**	**299**	**355**	**491**
Contribution income	82	90	122	127	132
Investment income *	25	28	64	5	14
Miscellaneous income	2	1	1	1	1
Transfer from Accumulated Reserve **	0	0	0	100	0
Total Receipts	**109**	**120**	**188**	**233**	**146**
Disablement benefit	20	21	27	23	31
Disablement grant	1	1	1	1	0
Injury allowance	12	11	10	18	14
Medical expenses	0	0	0	0	0
Survivors' benefits	5	5	6	7	6
Administration expenses	3	3	4	6	7
Transfer to Long-term fund **	51	81	83	42	62
Total expenditure	**91**	**122**	**131**	**98**	**121**
Fund at year-end	**301**	**299**	**355**	**491**	**517**

* Includes realized and unrealized gains and losses in 2008-09 and after
** Before 2007-08, transfers from or to Accumulated Fund

Table A4.4 Accumulated reserve (Million TT$)

	2005-06	2006-07	2007-08	2008-09	2009-10
Balance at start of year	**1,708**	**2,309**	**3,248**	**1,062**	-
Adjustment at restatement of financial statements	-	-	-	1,725	-
Transfers from:					
Long-term Benefits Fund	515	811	-2,369	-2,335	-
Short-term Benefits Fund	35	46	99	-351	-
Employment injury Benefit Fund	51	81	83	-100	-
Less: Administrative expenses					
Accumulated Reserve Misc. Income					
Balance at year-end	**2,309**	**3,248**	**1,062**	**0**	-,

Note: The accumulated reserve was abolished in 2008-2009.

Table A4.5 Revaluation reserve (Million TT$)

	2005-06	2006-07	2007-08	2008-09	2009-10
Balance at start of year	**2,651**	**1,643**	**1,506**	**1,704**	**39**
Adjustment at restatement of financial statements	-	-	-	-1,652	-
Revaluation reserve movement	-1,008	-137	198	-13	-5
Balance at year-end	**1,643**	**1,506**	**1,704**	**39**	**35**

A4.2 Comparison of demographic data

Table A4.6 Comparison of expected and observed number of contributors and beneficiaries

	2005-06	2006-07	2007-08	2008-09	2009-10
			Expected		
Contributors	**453,277**	**461,870**	**469,911**	**477,019**	**483,067**
Retirement pensioners	59,972	62,529	65,383	68,581	71,796
Retirement grants	2,928	2,826	2,871	2,862	2,848
Survivor pensioners	31,895	33,866	35,770	37,658	39,544
Invalidity	4,353	4,693	4,933	5,122	5,339
Total Long-term	**99,149**	**103,914**	**108,957**	**114,223**	**119,527**
Sickness	12,009	12,269	12,531	12,788	13,029
Maternity benefits	5,550	5,682	5,815	5,942	6,055
Maternity grants*	5,550	5,682	3,198	6,537	6,660
Funeral grants	4,915	4,983	5,054	5,127	5,199
Total Short-term	**28,024**	**28,616**	**26,599**	**30,393**	**30,943**
Injury allowances	2,895	2,946	2,990	3,029	3,061
Medical expense payments	204	207	211	213	215
Disablement pensioners	2,623	2,834	3,048	3,265	3,482
Disablement grants	179	183	186	189	192
Death benefits	523	533	524	523	528
Total Employment injury	**5,901**	**6,170**	**6,435**	**6,696**	**6,950**
			Observed		
Contributors	**465,389**	**501,450**	**525,755**	**497,805**	**482,839**
Retirement pensioners	60,092	62,710	66,100	70,075	72,934
Retirement grants	3,400	3,058	2,662	3,327	3,392
Survivor pensioners	31,687	32,613	33,419	34,285	35,159
Invalidity	4,842	4,820	4,998	4,471	4,460
Total Long-term	**100,021**	**103,201**	**107,179**	**112,158**	**115,945**
Sickness	10,616	11,502	11,370	12,112	11,730
Maternity benefits	5,628	6,106	6,293	6,971	6,883
Maternity grants*	5,628	6,106	80	421	653
Funeral grants	5,126	4,942	5,263	5,485	5,543
Total Short-term	**26,998**	**28,656**	**23,006**	**24,989**	**24,809**
Injury allowances	2,658	2,596	2,256	1,982	1,840
Medical expenses payments	232	188	133	105	106
Disablement pensioners	2,853	2,908	2,956	3,018	3,170
Disablement grants	130	115	119	102	125
Death benefits	568	559	559	550	528
Total Employment injury	**6,441**	**6,366**	**6,023**	**5,757**	**5,769**
			Ratio observed / expected		
Contributors	**1.027**	**1.086**	**1.119**	**1.044**	**1.000**
Retirement pensioners	1.002	1.003	1.011	1.022	1.016
Retirement grants	1.161	1.082	0.927	1.162	1.191
Survivor pensioners	0.993	0.963	0.934	0.910	0.889
Invalidity	1.112	1.027	1.013	0.873	0.835
Total Long-term	**1.009**	**0.993**	**0.984**	**0.982**	**0.970**
Sickness	0.884	0.937	0.907	0.947	0.900
Maternity benefits	1.014	1.075	1.082	1.173	1.137
Maternity grants	1.014	1.075	0.025	0.064	0.098
Funeral grants	1.043	0.992	1.041	1.070	1.066
Total Short-term	**0.963**	**1.001**	**0.865**	**0.822**	**0.802**
Injury allowances	0.918	0.881	0.754	0.654	0.601
Medical expenses payments	1.138	0.907	0.632	0.492	0.492
Disablement pensioners	1.088	1.026	0.970	0.924	0.863
Disablement grants	0.726	0.628	0.640	0.540	0.000
Death benefits	1.086	1.049	1.067	1.052	1.000
Total Employment injury	**1.092**	**1.032**	**0.936**	**0.860**	**0.830**

* For 2005-06 and 2006-2007, it refers to the "regular" Maternity grants. For 2007-08 and after, it refers to the Special maternity grants introduced in January 2008.

Appendix 5 Comparison of pension amounts resulting from the application of different pension formulas

This appendix presents an illustration of retirement pensions resulting from the application of the different formulas considered in the report regarding the conversion of the present earnings class system into a system based on a percentage of earnings. Pension amounts are presented for 15, 25 and 35 years of contribution to the NIS.

Table A5.1 Comparison of pension amounts under different pension formulas – 15 years of contribution (TT$)

		Present provisions			Option 1		Option 2		Option 3	
					2% first 15 years 1.1% over 15 years		1.6% per year		1.8% on earnings below TT$4,150 1.2% on earnings above TT$4,150	
Earnings class	Distribution of insured population	Pension amount	Replacement rate	Pension taking into account minimum pension	Pension amount	Replacement rate	Pension amount	Replacement rate	Pension amount	Replacement rate
I	1%	336	48.4%	3000	208	30%	166	24%	187	27%
II	1%	437	42.9%	3000	306	30%	244	24%	275	27%
III	5%	517	37.9%	3000	410	30%	328	24%	369	27%
IV	5%	598	34.1%	3000	527	30%	421	24%	474	27%
V	4%	672	31.0%	3000	650	30%	520	24%	585	27%
VI	6%	796	30.4%	3000	787	30%	629	24%	708	27%
VII	6%	937	30.2%	3000	930	30%	744	24%	837	27%
VIII	8%	1078	30.2%	3000	1073	30%	858	24%	965	27%
IX	3%	1229	30.0%	3000	1229	30%	983	24%	1106	27%
X	6%	1390	30.0%	3000	1391	30%	1113	24%	1208	26%
XI	6%	1552	30.0%	3000	1554	30%	1243	24%	1306	25%
XII	5%	1632	28.3%	3000	1729	30%	1383	24%	1411	24%
XIII	4%	1907	29.8%	3000	1918	30%	1534	24%	1524	24%
XIV	4%	2114	29.8%	3000	2126	30%	1700	24%	1649	23%
XV	4%	2350	29.8%	3000	2363	30%	1891	24%	1792	23%
XVI	34%	2476	29.8%	3000	2490	30%	1992	24%	1867	23%
Average	**All earnings class**	**1646**			**1643**		**1314**		**1306**	
	Earnings classes V and above	**1860**			**1870**		**1496**		**1480**	

Table A5.2 Comparison of pension amounts under different pension formulas – 25 years of contribution (TT$)

		Present provisions			Option 1		Option 2		Option 3	
					2% first 15 years 1.1% over 15 years		1.6% per year		1.8% on earnings below TT$4,150 1.2% on earnings above TT$4,150	
Earnings class	Distribution of insured population	Pension amount	Replacement rate	Pension taking into account minimum pension	Pension amount	Replacement rate	Pension amount	Replacement rate	Pension amount	Replacement rate
I	1%	434	62.6%	3000	284	41%	277	40%	312	45%
II	1%	574	56.3%	3000	418	41%	407	40%	458	45%
III	5%	691	50.6%	3000	560	41%	546	40%	614	45%
IV	5%	808	46.0%	3000	720	41%	702	40%	790	45%
V	4%	919	42.4%	3000	888	41%	867	40%	975	45%
VI	6%	1096	41.8%	3000	1075	41%	1049	40%	1180	45%
VII	6%	1288	41.6%	3000	1270	41%	1239	40%	1394	45%
VIII	8%	1484	41.5%	3000	1466	41%	1430	40%	1609	45%
IX	3%	1690	41.3%	3000	1679	41%	1638	40%	1843	45%
X	6%	1915	41.3%	3000	1901	41%	1855	40%	2014	43%
XI	6%	2135	41.2%	3000	2123	41%	2071	40%	2176	42%
XII	5%	2281	39.6%	3000	2363	41%	2305	40%	2352	41%
XIII	4%	2627	41.1%	3000	2621	41%	2557	40%	2540	40%
XIV	4%	2912	41.1%	3000	2905	41%	2834	40%	2748	39%
XV	4%	3237	41.1%	3237	3230	41%	3151	40%	2986	38%
XVI	34%	3411	41.1%	3411	3402	41%	3319	40%	3112	38%
Average	**All earnings class**	**2266**			**2245**		**2190**		**2177**	
	Earnings classes V and above	**2563**			**2555**		**2493**		**2466**	

Table A5.3 Comparison of pension amounts under different pension formulas – 35 years of contribution (TT$)

		Present provisions			Option 1		Option 2		Option 3	
					2% first 15 years 1.1% over 15 years		1.6% per year		1.8% on earnings below TT$4,150 1.2% on earnings above TT$4,150	
Earnings class	Distribution of insured population	Pension amount	Replacement rate	Pension taking into account minimum pension	Pension amount	Replacement rate	Pension amount	Replacement rate	Pension amount	Replacement rate
I	1%	532	76.7%	3000	361	52%	388	56%	437	63%
II	1%	711	69.8%	3000	530	52%	570	56%	642	63%
III	5%	864	63.3%	3000	710	52%	764	56%	860	63%
IV	5%	1017	58.0%	3000	913	52%	983	56%	1106	63%
V	4%	1166	53.8%	3000	1127	52%	1213	56%	1365	63%
VI	6%	1396	53.2%	3000	1363	52%	1468	56%	1652	63%
VII	6%	1639	52.9%	3000	1611	52%	1735	56%	1952	63%
VIII	8%	1889	52.8%	3000	1859	52%	2002	56%	2252	63%
IX	3%	2151	52.5%	3000	2129	52%	2293	56%	2580	63%
X	6%	2439	52.6%	3000	2411	52%	2597	56%	2819	61%
XI	6%	2718	52.5%	3000	2693	52%	2900	56%	3046	59%
XII	5%	2931	50.8%	3000	2997	52%	3227	56%	3292	57%
XIII	4%	3347	52.4%	3347	3324	52%	3579	56%	3556	56%
XIV	4%	3710	52.4%	3710	3684	52%	3968	56%	3847	54%
XV	4%	4124	52.4%	4124	4097	52%	4412	56%	4180	53%
XVI	34%	4346	52.4%	4346	4315	52%	4647	56%	4357	53%
Average	**All earnings class**	**2885**			**2848**		**3067**		**3048**	
	Earnings classes V and above	**3266**			**3241**		**3490**		**3453**	

Appendix 6 Recommended contribution and benefit schedules to be applied from January 2013

Table A6.1 Earnings classes and contributions
(based on a contribution rate of 12 percent)

Earnings class	Weekly earnings	Monthly earnings	Assumed average weekly earnings	Employee weekly contribution	Employer weekly contribution	Class Z weekly contribution
I	180 - 300	780 – 1,300	240	9.60	19.20	1.95
II	300 - 410	1,300 – 1,777	355	14.20	28.40	2.88
III	410 - 540	1,777 – 2,340	475	19.00	38.00	3.86
IV	540 - 680	2,340 – 2,947	610	24.40	48.80	4.96
V	680 - 830	2,947 – 3,597	755	30.20	60.40	6.13
VI	830 – 1,000	3,597 – 4,333	915	36.60	73.20	7.43
VII	1,000 – 1,170	4,333 – 5,070	1,085	43.40	86.80	8.82
VIII	1,170 – 1,340	5,070 – 5,807	1,255	50.20	100.40	10.20
IX	1,340 – 1,530	5,807 – 6,630	1,435	57.40	114.80	11.66
X	1,530 – 1,720	6,630 – 7,453	1,625	65.00	130.00	13.20
XI	1,720 – 1,910	7,453 – 8,277	1,815	72.60	145.20	14.75
XII	1,910 – 2,130	8,277 – 9,230	2,020	80.80	161.60	16.41
XIII	2,130 – 2,360	9,230 – 10,227	2,245	89.80	179.60	18.24
XIV	2,360 – 2,610	10,227 – 11,310	2,485	99.40	198.80	20.19
XV	2,610 – 2,723	11,310 – 11,800	2,667	106.67	213.33	21.67
XVI	2,723 and over	11,800 and over	2,723	108.92	217.84	22.12

Table A6.2 Basic retirement and invalidity pension rates

Earnings class	Basic pension (weekly)	Basic pension (monthly)
I	116.25	503.75
II	152.20	659.52
III	179.97	779.88
IV	207.78	900.37
V	234.05	1,014.22
VI	277.80	1,203.79
VII	328.13	1,421.88
VIII	378.45	1,639.94
IX	430.73	1,866.49
X	487.27	2,111.51
XI	543.82	2,356.54
XII	602.49	2,610.80
XIII	669.77	2,902.32
XIV	741.37	3,212.59
XV	795.56	3,447.41
XVI	812.37	3,520.27

Table A6.3 Increments for retirement and invalidity pensions

Earnings class	Increment (weekly)	Increment (monthly)
I	1.70	7.37
II	2.39	10.36
III	3.02	13.09
IV	3.64	15.77
V	4.30	18.63
VI	5.23	22.66
VII	6.15	26.65
VIII	7.12	30.85
IX	8.08	35.01
X	9.19	39.82
XI	10.22	44.29
XII	11.38	49.31
XIII	12.65	54.82
XIV	14.00	60.67
XV	15.02	65.09
XVI	15.34	66.47

Table A6.4 Basic survivors' pension rates

Earnings class	Weekly				Monthly			
	Widow / widower	Dependent child	Dependent parents	Dependent orphan	Widow / widower	Dependent child	Dependent parents	Dependent orphan
I	68.67	34.34	34.34	68.67	297.57	148.81	148.81	297.57
II	90.35	45.18	45.18	90.35	391.52	195.78	195.78	391.52
III	106.72	53.37	53.37	106.72	462.45	231.27	231.27	462.45
IV	124.29	62.14	62.14	124.29	538.59	269.27	269.27	538.59
V	140.43	70.22	70.22	140.43	608.53	304.29	304.29	608.53
VI	166.35	83.18	83.18	166.35	720.85	360.45	360.45	720.85
VII	195.85	97.94	97.94	195.85	848.68	424.41	424.41	848.68
VIII	225.37	112.69	112.69	225.37	976.60	488.32	488.32	976.60
IX	257.09	128.54	128.54	257.09	1,114.06	557.01	557.01	1,114.06
X	291.01	145.51	145.51	291.01	1,261.04	630.54	630.54	1,261.04
XI	324.94	162.48	162.48	324.94	1,408.07	704.08	704.08	1,408.07
XII	361.60	180.80	180.80	361.60	1,566.93	783.47	783.47	1,566.93
XIII	401.86	200.92	200.92	401.86	1,741.39	870.65	870.65	1,741.39
XIV	444.82	222.40	222.40	444.82	1,927.55	963.73	963.73	1,927.55
XV	477.34	238.67	238.67	477.34	2,068.47	1,034.24	1,034.24	2,068.47
XVI	487.42	243.70	243.70	487.42	2,112.15	1,056.03	1,056.03	2,112.15

Table A6.5 Increments for survivors' pensions

Earnings class	Weekly				Monthly			
	Widow/ widower	Dependant child	Dependant parents	Dependant orphan	Widow/ widower	Dependant child	Dependant parents	Dependant orphan
I	1.04	0.51	0.51	1.04	4.51	2.21	2.21	4.51
II	1.44	0.73	0.73	1.44	6.24	3.16	3.16	6.24
III	1.82	0.92	0.92	1.82	7.89	3.99	3.99	7.89
IV	2.20	1.11	1.11	2.20	9.53	4.81	4.81	9.53
V	2.58	1.30	1.30	2.58	11.18	5.63	5.63	11.18
VI	3.15	1.59	1.59	3.15	13.65	6.89	6.89	13.65
VII	3.70	1.85	1.85	3.70	16.03	8.02	8.02	16.03
VIII	4.29	2.14	2.14	4.29	18.59	9.27	9.27	18.59
IX	4.86	2.43	2.43	4.86	21.06	10.53	10.53	21.06
X	5.51	2.76	2.76	5.51	23.88	11.96	11.96	23.88
XI	6.15	3.08	3.08	6.15	26.65	13.35	13.35	26.65
XII	6.83	3.42	3.42	6.83	29.60	14.82	14.82	29.60
XIII	7.59	3.79	3.79	7.59	32.89	16.42	16.42	32.89
XIV	8.40	4.19	4.19	8.40	36.40	18.16	18.16	36.40
XV	9.01	4.50	4.50	9.01	39.04	19.50	19.50	39.04
XVI	9.20	4.61	4.61	9.20	39.87	19.98	19.98	39.87

Table A6.6 Employment injury benefit rates

Earnings class	Weekly	Monthly
I	160.26	694.46
II	239.42	1,037.49
III	315.70	1,368.03
IV	403.44	1,748.24
V	507.15	2,197.65
VI	616.09	2,669.72
VII	725.40	3,143.40
VIII	834.73	3,617.16
IX	952.22	4,126.29
X	1,077.89	4,670.86
XI	1,203.53	5,215.30
XII	1,339.31	5,803.68
XIII	1,496.66	6,485.53
XIV	1,656.67	7,178.90
XV	1,777.76	7,703.63
XVI	1,815.34	7,866.47

Table A6.7 Employment injury death benefit rates

Earnings class	Widow		Dependent child		Dependant parent	
	Weekly	Monthly	Weekly	Monthly	Weekly	Monthly
I	96	416	48	208	48	208
II	144	623	71	308	71	308
III	190	823	95	412	95	412
IV	242	1,049	120	521	120	521
V	304	1,317	153	663	153	663
VI	370	1,602	185	801	185	801
VII	436	1,889	217	940	217	940
VIII	500	2,167	251	1,088	251	1,088
IX	572	2,479	285	1,236	285	1,236
X	646	2,800	323	1,400	323	1,400
XI	722	3,130	361	1,565	361	1,565
XII	804	3,484	402	1,742	402	1,742
XIII	898	3,891	449	1,946	449	1,946
XIV	994	4,307	497	2,154	497	2,154
XV	1,067	4,622	533	2,311	533	2,311
XVI	1,089	4,720	545	2,360	545	2,360

Table A6.8 Constant attendance and care allowance rates

Earnings class	Weekly	Monthly
I	23.75	102.92
II	39.38	170.65
III	52.08	225.68
IV	68.24	295.71
V	87.07	377.30
VI	106.50	461.50
VII	125.72	544.79
VIII	148.42	643.15
IX	171.32	742.39
X	196.02	849.42
XI	222.43	963.86
XII	263.25	1,140.75
XIII	292.58	1,267.85
XIV	323.86	1,403.39
XV	347.54	1,506.01
XVI	354.89	1,537.86

Table A6.9 Sickness and maternity benefit rates

Earnings class	Weekly	Monthly
I	144.00	624.00
II	214.87	931.10
III	285.00	1,235.00
IV	362.25	1,569.75
V	456.78	1,979.38
VI	554.66	2,403.53
VII	652.88	2,829.15
VIII	751.11	3,254.81
IX	857.22	3,714.62
X	969.34	4,200.47
XI	1,083.33	4,694.43
XII	1,206.00	5,226.00
XIII	1,347.00	5,837.00
XIV	1,491.00	6,461.00
XV	1,599.98	6,933.25
XVI	1,633.80	7,079.80

Table A6.10 Rates for medical expenses

Expense	From January 2008	From January 2013
a) Doctor's visit		
General Practitioner		
Office visit	TT$46.88 per visit	TT$71.40 per visit
Visit by doctor to site	TT$93.13 per visit	TT$141.84 per visit
Specialist		
Office visit	TT$116.25 per visit	TT$177.05 per visit
Visit by doctor to site	TT$155 per visit	TT$236 per visit
Psychiatrist		
Initial consultation	TT$140 per hour	TT$213per hour
Follow up	TT$116.25 per visit	TT$177.05 per visit
b) Drugs and dressing	Up to TT$775 per injury	Up to TT$1,180 per injury
c) Hospital expenses	TT$232.50 per day	TT$354.10 per day
d) Operations		
Minor	Up to TT$620	Up to TT$944
Intermediate	Up to TT$1,240	Up to TT$1,889
Major	Up to TT$2,480	Up to TT$3,777
Maximum total medical expenses per injury	TT$22,500	TT$34,300