

**Mauritius National Pensions Fund**

**Actuarial Review as at 30 June 2005**

**Report by GAD**

**November 2008**





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## **Mauritius National Pensions Fund**

### **Actuarial review as at 30 June 2005**

To: The Minister of Social Security, National Solidarity and Senior Citizen Welfare and Reform Institutions  
Government of Mauritius

In accordance with the terms of Section 38A of the National Pensions Act, I have carried out an actuarial review of the National Pensions Fund as at 30 June 2005. The executive summary sets out the main results and conclusions. The remainder of the report provides a fuller description of the actuarial review.



**E I Battersby**  
**Government Actuary's Department**  
**London**  
**28 November 2008**

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## Executive summary

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1. At the request of the Minister of Social Security, we have carried out an actuarial review of the Mauritius National Pensions Fund ('the Fund' or 'the Scheme') as at 30 June 2005.
2. The main purpose of the review is to examine the likely future trends in the income and outgo of the Fund, and in the balance of the Fund's assets. The report also considers whether the current contribution rates are adequate to meet the cost of accruing pensions and includes an assessment of the capital value of the accrued contributory pensions.
3. The central projection has been carried out on the assumption that the rate of investment return on the Fund's assets will exceed average earnings increases by 2% a year and price increases by 4% a year. This implies a future rate of real earnings growth of 2% a year (above prices). It has also been assumed that the standard rate of contribution will remain at 9% of earnings, and that both the cost and value of a pension point will increase in line with earnings, so that the ratio of the cost to value remains at 11:1. Basic pensions and contributory pensions in payment have been assumed to increase in line with price increases. The projections cover a period of 40 years from the date of the review (or some 65 years after the inception of the Scheme) and are shown in constant 2004-05 price terms.
4. The projections use the 2004-based population projection (medium variant) produced by the Central Statistics Office. The population over pension age is projected to more than triple over the projection period, whilst the population at working ages is projected to remain broadly unchanged. This has a significant impact on the balance between projected expenditure and pensions and contribution income.
5. The review assumes that the Government will continue to meet the full cost of basic pensions so that future trends in expenditure on basic pensions will not affect the financial progress of the NPF. However, the projected future increases in the number of pensioners will lead to a significant increase in the cost of basic pensions. On the central assumption that basic pensions will increase in line with prices, the cost of basic pensions is expected to increase only gradually, when expressed as a percentage of projected GDP. However, by 2045, the rate of basic pension would fall to less than one half of its current rate relative to average earnings. If basic pensions are assumed to increase in line with average earnings, then it is estimated that the cost will more than double as a percentage of projected GDP over the period of the review.
6. A key feature of the projections is the increasing maturity of the contributory element of the NPF. Under the Scheme provisions, the contributory pensions of members who were over age 40 in 1978 (and so retired before 1998) were doubled, thus partly offsetting the reduced period over which contributions were paid. The contributory pensions of members who were aged between 20 and 40 in 1978 (and so due to retire over the 20 years from 1998) are increased as if they have been contributing for 40 years.

7. Thus, contributory pensions at the ultimate full rate (including enhancements) first came into payment in 1998. It will not be until after around 2020 that most of the contributory retirement pensions in payment will be at the full rate although the average contributory pension is likely to increase for some time thereafter. The cost of contributory pensions is projected to continue to increase for the period after 2020 because of the expected continuing increase in the number of Scheme members over pension age.
8. Under the assumptions used for the central projection, the current contribution rate of 9%, coupled with the current 'cost to value' ratio of pension points of 11:1, is sufficient to meet the cost of accruing pensions (and associated administration costs). The central projection also indicates that the Fund balance will remain healthy over the 40-year period of the review. For the next 10 years, contribution income is projected to exceed expenditure on contributory and industrial injury pensions with the excess income available for new investment. Thereafter, expenditure on benefits is projected to exceed contribution income and it will be necessary to meet the shortfall from investment income and/or the sale of assets. The precise timing of this change will depend on whether the assumptions are borne out and on the actual investment returns achieved on the Fund's assets.
9. The future projections of contribution income, benefit expenditure and investment income are all subject to considerable uncertainty, and the margins for error increase with the projection period. It should be noted that the central assumption of investment return is not intended to represent an investment target. In order to indicate the sensitivity of the projections to the underlying assumptions, the review also includes projections on a range of policy and financial variant assumptions.
10. In particular, the future stability of the Fund would be improved if the ratio of the cost to value of a pension point were to be increased from its current level of 11:1 to, say, 12:1. The financial variants indicate that, if the assets were to generate a real rate of return higher than the assumed rate of 4% a year, then it is likely that the Fund would build up a sizeable surplus. On the other hand, if the assets were to earn a real rate of return of 3% a year, then the current contribution rate of 9% and 'cost to value' ratio of a pension point of 11:1 would not be adequate to meet the cost of accruing pensions.
11. Proposals are being finalised to increase the minimum age at which pensions become payable from 60 to 65. Introducing this option in the way set out in Section 9 (with no other changes to the provisions) would lead to a surplus in the Scheme's valuation balance sheet position.
12. In accordance with Section 38A of the National Pensions Act, the next actuarial review will be due as at June 2010. In view of the time needed to assemble the necessary statistical data, the work will be carried out mainly during 2011. However, in the event of any significant amendments to the provisions of the Scheme, it would be desirable to commission an actuarial report before this date in order to assess the implications (both short-term and long-term) of the changes.

## **1 Introduction**

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1.1 At the request of the Minister of Social Security, we have carried out an actuarial review of the Mauritius National Pensions Fund ('the Fund' or 'the Scheme') as at 30 June 2005. The previous actuarial review was carried out as at 30 June 2000 and the results were presented in our report dated 17 December 2001.

### **The Scheme**

1.2 The Scheme was introduced in July 1978 by means of the National Pensions Act 1976 ('the Act'). There have since been a number of amendments to the Scheme but none have materially changed the main benefit or contribution provisions.

1.3 The Scheme provides for payment of three different classes of pension:

- (i) Non-contributory (or basic) pensions, for which everyone in Mauritius is eligible subject to certain conditions such as residency qualifications,
- (ii) Contributory pensions, for which only those who have paid contributions to the Scheme are eligible, and
- (iii) Industrial injury pensions, for which only those contributors who are employed are eligible.

1.4 Public servants are excluded from the contributory part of the Scheme and so do not pay contributions or receive contributory or industrial injury pensions.

1.5 Basic pensions are payable at a flat rate and their cost is borne wholly by the Government. Basic pensions are increased on a regular basis, usually annually.

1.6 Contributory pensions are based on revalued career earnings although the benefits are determined in a manner similar to benefits from a defined-contribution arrangement. Contributory pensions depend on the amount of earnings-related contributions that have been paid in respect of the individual: contributions are applied to purchase 'pension points' which, in turn, are converted into pension at the date of retirement. The value of pension points is increased between the date of purchase and the year before retirement.

1.7 The Act provides for contributory pensions in payment to be increased by such percentage as the Minister may prescribe. To date, such increases to contributory pensions have been broadly in line with increases in the Consumer Price Index (CPI). There is no requirement that future increases should match the CPI.

1.8 Industrial injury pensions are earnings-related and depend on the level of the employee's earnings during the 12 months before the injury occurs.

1.9 The standard rate of contribution is 9% of insurable earnings (3% by the employee, 6% by the employer). Contributions in respect of most employees in the sugar industry are payable at a rate of 13½% (3% by the employee, 10½% by the employer): the resulting contributory pensions are correspondingly higher. Under prescribed conditions, other employers and employees may pay a higher rate of contribution.

1.10 Appendix A contains further details of the provisions of the Scheme.

### **Objectives of the review**

- 1.11 The main purpose of the review is to examine the likely future trends in the income and outgo of the Fund, and in the balance of the Fund's assets. The report also considers whether the current contribution rates are adequate to meet the cost of accruing pensions and includes an assessment of the capital value of the accrued contributory pensions.
- 1.12 Projections have been carried out on a range of assumptions in order to indicate the sensitivity of the results to the assumptions. In addition, the review considers the effect of certain policy changes, such as a higher pension age and changing the relationship between the cost of pension points and the value of pension points at retirement.
- 1.13 The main factors affecting the future finances of the Fund are:
- (i) the numbers of future contributors and pensioners;
  - (ii) the future rate of increase in prices;
  - (iii) the future rate of increase in earnings;
  - (iv) the future cost and value of pension points;
  - (v) the future rate of increase to contributory pensions in payment; and
  - (vi) the future rate of investment return on the Fund's assets.
- 1.14 The assumptions made concerning these and other factors are discussed later in the report.
- 1.15 In addition, the review considers expenditure on basic pensions. The cost of basic pensions is met directly by the Government and so does not affect the financial balance of the Fund. It is appropriate, however, that the Government should be aware of the projected future cost of basic pensions and consider its implications.

### **The report**

- 1.16 This report includes projections of the income and expenditure of the Fund for the next 40 years. Section 2 summarises developments since the previous review. Section 3 describes the data used for the review. Section 4 considers the demographic projections. The methods and assumptions adopted for the review are discussed in Sections 5 and 6. The results for basic pensions and contributory pensions are set out and discussed in Sections 7 and 8 respectively. Sections 9 and 10 contain results on alternative policy and financial assumptions respectively. Section 11 discusses some options for future changes to the Scheme.
- 1.17 The results of the projections in this report are all expressed in constant 2004-05 price terms. All amounts are expressed in Mauritian Rupees (Rs).
- 1.18 The methodology used in the projections in this report is based on sound actuarial principles. The results, however, are based on assumptions concerning uncertain future events and outcomes, and it should be borne in mind that actual experience could differ, possibly materially, from that indicated in the projections.
- 1.19 This report complies with the International Actuarial Association's guidelines of actuarial practice for social security programs effective from 1 January 2003.

## **2 Developments since the 2000 review**

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### **The 2000 review**

- 2.1 The previous actuarial review was carried out as at 30 June 2000 and the results were presented in the report dated 17 December 2001. The financial projections were expressed in constant 1999-2000 price terms. For the main projections, it was assumed that, over the long term, basic pensions and contributory pensions in payment would increase in line with price inflation, and the cost and value of pension points would increase in line with earnings. It was assumed that the 'cost to value' ratio of pension points would remain at its current level of 11:1. Investment income was assumed to be 4% a year in excess of price increases and 2% a year in excess of earnings increases.
- 2.2 Under these assumptions, the 2000 review indicated that a contribution rate of 9% of pay (13½% for higher rate contributors) would not quite be sufficient to meet the cost of accruing benefits, if the 'cost to value' ratio of pension points remained at 11:1. The review concluded that there was no immediate need for action to rectify this, although it did discuss some possible options available to do so.
- 2.3 The 2000 review also included projections on alternative assumptions, in which increases to basic pensions and contributory pensions in payment were in line with earnings (at a higher rate than prices), and assuming different real rates of investment return. These projections indicated that the projected Fund balance was sensitive to relatively small changes in the real rate of investment return.

### **Developments since 2000**

- 2.4 In 2001, the introduction of the Voluntary Retirement Scheme (VRS) in the sugar industry allowed certain employees, on leaving the sugar industry, to take early payment of an actuarially reduced contributory retirement pension. The main effect of the VRS is to bring forward the payment of contributory benefits that would otherwise have been payable from a later date. The introduction of the VRS is discussed further in paragraphs 8.28 to 8.36.
- 2.5 Proposals have been announced to increase the normal retirement age for both basic pensions and contributory pensions from age 60 to age 65. At the time of carrying out this review, the details of implementation had not been finalised. Therefore, the main projections assume a retirement age of 60, but variant projections have been produced, whereby the retirement age is increased from age 60 to age 65 over a 10-year period starting 1 July 2008. The results of these variant projections are shown in Section 9 of this report.
- 2.6 The proposals also contain some amendments to contributory widow's pension (CWP). The proposed changes to CWP have not been allowed for in this review.
- 2.7 Basic pensions, contributory pensions in payment, the cost and the value (at retirement) of contributory pension points, and the earnings floor and ceiling have all increased annually since 2001.

- 2.8 Over the past five years, the earnings floor and ceiling, and the cost and the value (at retirement) of contributory pension points, have increased broadly in line with increases in earnings. Basic pensions have increased at a rate somewhere between earnings increases and price inflation (as measured by the CPI). Contributory pensions in payment have increased in line with the CPI.

#### **Finances of the Fund**

- 2.9 Appendix B summarises the Fund accounts for the 5 years ending 30 June 2005. In each year, income substantially exceeded expenditure. As a result, the Fund balance broadly doubled, from Rs 18,891 million as at 30 June 2000 (re-stated from Rs 18,887 million in the previous review) to Rs 38,156 million as at June 2005. This increase was due partly to the excess of contribution income over expenditure (on contributory benefits and administration), and partly to the substantial amount of investment income earned on the Fund's assets. We understand that the basis for valuing the Fund's assets has changed since 2000, from cost value to fair value. This has led to an increase in the value of the assets of around Rs 2.6 billion.
- 2.10 Contribution income from employers and employees increased by about 40% between 1999-2000 and 2004-05. This increase is broadly accounted for by increases in average earnings (and hence contributions). The number of employees contributing to the Scheme rose slightly as well, which also contributed to the increase in contribution income.
- 2.11 Expenditure on basic pensions increased by around 50% over the five years ending June 2005. Expenditure on contributory benefits more than doubled over the same period. Expenditure on contributory pensions still forms a relatively small percentage (about 10%) of total expenditure.
- 2.12 Expenditure on contributory pensions increased partly because of the increasing number of contributory pensions in payment and partly because of an increase in the average amount of contributory pension in payment.

### **3 Data**

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- 3.1 Reliable and comprehensive data regarding the membership and financial position of the Scheme is critical for the results of any actuarial review. Data is used for three main purposes:
- (i) To analyse past experience, in order to determine appropriate assumptions to adopt for the projections
  - (ii) To check that the projection methodology is applicable, by reproducing the recent experience of the Scheme using membership data
  - (iii) To use as a starting point for the financial projections
- 3.2 The data used for this review was obtained from several sources.
- 3.3 The Central Statistics Office (CSO) provided us with its latest population projections, both with and without migration, for the period 2004 to 2044. These projections were used as the basis for this review, and are discussed in Section 4 of the report. Other demographic data was available from regular publications produced by the CSO.
- 3.4 We have made use of the Digest of Labour Statistics 2004, produced by the CSO. Other employment data was available from published Government sources, including the CSO website.
- 3.5 Published data was available on the numbers of beneficiaries of basic pensions over the period since the last review and up to June 2005.
- 3.6 The Ministry of Social Security provided data on the number of beneficiaries of each type of contributory pension, along with the amounts of pension in payment. This data was broken down according to age, sex and year of receipt of benefit.
- 3.7 The Ministry of Social Security also provided data on the number of contributors and the amounts of contributions paid in respect of contributory members of the Fund since the last review. This data was broken down according to age, sex and year of contribution.
- 3.8 Data on total pension points accumulated by contributory members was estimated from the data described above.
- 3.9 Relative to the accounts of the Fund, the contributors and contributions data was deficient for all years. Consequently, adjustments to the data were required so that it was consistent with information derived from the accounts. In other respects, the data provided to us appears to be adequate for the purposes of this review. Nevertheless, it is important to note that any material omissions or inaccuracies in the data provided could have significant consequences on the results of the financial projections.
- 3.10 Appendix D summarises the contributors, pension points and benefits data.

## 4 Demographic projections

4.1 In order to project future levels of contribution income and benefit expenditure, estimates are required of the future population of the Republic of Mauritius. This section describes the population data and projections used to estimate the future numbers of both contributors and pensioners. It also briefly considers the financial implications of the population projection.

4.2 The population projection used in this review was prepared by the Central Statistics Office (CSO). The 2004-based medium variant population projection has been used to project forward the population of Mauritius.

### Population projection assumptions

4.3 The population projection allows for future improvements in longevity. It assumes that the expectation of life at birth will increase over the projection period, from 69 to about 76 years for males and from 75 to 80 years for females.

4.4 The population projection assumes that the total fertility rate (a measure of the average number of babies which a woman will give birth to over her lifetime) will fall slightly from 1.94 in 2004 to 1.91 in 2009, and remain at that level for the rest of the projection period.

4.5 It is assumed that there will be net outward migration from the Republic of Mauritius of around 500 people a year from 2004 to 2009, with migration falling gradually to zero by 2024, and then remaining at that level for the rest of the projection period.

### Population projection results

4.6 The detailed results of the projection are shown in Appendix C. Table 1 summarises the main features of the projection, and shows the 'pensioner support ratio' (obtained by dividing the population of working age by the population over pension age), for the 40 years covered by the review.

**Table 1 – Population projection, 2005-2045**

	thousands				
<b>Population at mid-year</b>	<b>2005</b>	<b>2015</b>	<b>2025</b>	<b>2035</b>	<b>2045</b>
Children (0-14)	305	289	282	273	268
Working ages (15-59)	819	872	871	870	846
Pension age (60+)	119	180	266	322	365
<b>All ages</b>	<b>1,243</b>	<b>1,341</b>	<b>1,419</b>	<b>1,465</b>	<b>1,479</b>
Pensioner support ratio	6.9	4.8	3.3	2.7	2.3

Source: Central Statistics Office, Mauritius

4.7 The main features of the population projection that will influence the future finances of the Fund are as follows:

- (a) The population over pension age is expected to more than double over the next 20 years and to increase by a further 40% over the subsequent 20 years. Overall, the population over pension age is expected to more than triple over the next 40 years. This is due to two main factors, increasing longevity and the current age structure of the population.
- (b) The population at working ages is expected to increase by around 6% between 2005 and 2015 and to decline gradually over the subsequent 30 years. However, by the end of the projection period, the population at working ages is still expected to be about 3% higher than in 2005.
- (c) The pensioner support ratio is expected to fall continuously over the 40-year projection period. Currently, there are approximately 7 people of working age for each person over pension age but this ratio is expected to fall to about 3½ by 2025, and to about 2½ by 2045.
- (d) The number of children is projected to decrease steadily. The number of children in 2005 reflects births over the past 15 years. The decline in future numbers is due mainly to the assumed lower fertility rates than those experienced in the recent past.

4.8 The financial implications of these features are, briefly, as follows:

- (a) The projected increase in the population over pension age will lead to correspondingly significant increases in the estimated future expenditure on basic pensions. Due to the increasing maturity of the contributory scheme, there will be even steeper increases in future expenditure on contributory pensions.
- (b) The trend in the number of contributors over the period of the review will be related to the changes in the numbers at working ages. This indicates that, in constant earnings terms, contribution income will increase steadily for the first 10 to 15 years followed by a relatively gradual decline thereafter.
- (c) The pensioner support ratio is a particularly important indicator in assessing the likely future trend in the balance of the Fund. Whether pensions are financed on a pay-as-you-go basis (basic pensions) or on a funded basis (contributory pensions), the effective cost of supporting pensions at any point in time must fall on the economically active population at that time. The steep decline in the pensioner support ratio therefore implies that, other things being equal, a greater part of the wealth produced by the working population will be transferred to the pensioner population.
- (d) Projecting future births is extremely uncertain but, although the eventual level of fertility will be crucial in determining the Fund's financial position over the very long term, the assumed level of future fertility will have relatively little impact over the next 40 years. Only the population over age 20 in 2005 will attain pension age during the 40-year projection period. Future births will have no material effect for the first 15 years on either contribution income or benefit expenditure. Subsequently, from 2020, the fertility effect will build up slowly as births after 2005 enter the working population and pay contributions.

- 4.9 Projecting the future population of any country is subject to uncertainty. Although the current population projections include allowance for future improvements in longevity, there may still be potential for further longevity improvement in Mauritius, and this would lead to higher projected numbers in the population, especially above pension age. Migration can also be difficult to predict with any certainty, and could cause significant changes in the Fund's future financial position. The assumptions underlying the population projection used for this review are considered to be reasonable but it is important to bear in mind these underlying uncertainties when assessing the prospects for future contribution income and benefit expenditure.

## 5 Financial assumptions

5.1 The projected future amounts of contribution income and benefit expenditure depend, inter alia, on the future level of earnings, the rates of basic pensions, the value and cost of pension points and increases granted to contributory pensions in payment. In addition, the amount of assets in the Fund depends on the future rate of return earned on the investments. This section describes the assumptions adopted in respect of these items.

### Real earnings growth

5.2 Over recent years, the economy of Mauritius has experienced a sustained period of real earnings growth. Table 2 sets out the annual rates of increases in prices and earnings for the past 10 years together with the rate at which earnings increases have exceeded price increases (real earnings growth).

**Table 2 – Rates of prices and earnings increases and real earnings growth**

Year ending 30 June	Price increases <sup>1</sup>	Earnings increases <sup>2</sup>	Real earnings growth
1996	5.8%	7.0%	1.1%
1997	7.9%	11.0%	2.9%
1998	5.4%	8.0%	2.5%
1999	7.9%	8.6%	0.6%
2000	5.3%	8.8%	3.3%
2001	4.4%	5.5%	1.1%
2002	6.3%	6.5%	0.2%
2003	5.1%	10.9%	5.5%
2004	3.9%	8.1%	4.1%
2005	5.6%	4.4%	- 1.2%
<b>Average</b>	<b>5.8%</b>	<b>7.9%</b>	<b>2.0%</b>

1. Based on the Consumer Price Index (CPI).

2. Based on average monthly earnings in large establishments at March of each year.

5.3 Table 2 indicates that, over the past 10 years, earnings have increased at a faster rate than prices by an average of 2% a year. For the purpose of the central projections of this review, it has been assumed that, over the long term, average earnings will increase at a rate of 2% a year in excess of price increases. This assumption is the same as that adopted for the previous review.

5.4 In order to illustrate the sensitivity of the projections to the assumed rate of real earnings growth, alternative projections have been produced on the assumption that real earnings growth will be 1% a year or 3% a year.

### **Nominal earnings growth**

- 5.5 It is also necessary to make an assumption for actual or 'nominal' earnings growth, although this has relatively little effect on the results of the financial projections. Based on data on earnings growth in Mauritius over the past 20 years, it has been assumed that nominal earnings growth will be 7% a year.

### **Contributory pension points**

- 5.6 For most of the period from 1978 to 2000, both the cost and value of a pension point increased broadly in line with prices (the CPI). Since 2001, the cost and value of a pension point have increased broadly in line with earnings increases.
- 5.7 It has been assumed that, over the long term, both the cost and value of a pension point will increase in line with earnings. This means that the level of pension payable at retirement will broadly maintain its value over an individual's working lifetime, when expressed as a proportion of career earnings revalued in line with average earnings. The ratio of the cost of a pension point to its value is assumed to remain at the present level of 11:1.
- 5.8 In order to illustrate the sensitivity of the projections to the assumed rate of increase of the cost and value of pension points, alternative projections have been produced on the assumption that both the cost and value of pension points increase in line with prices.

### **Basic pensions**

- 5.9 Over the past twenty years or so, basic pensions have been increased broadly in line with prices, or a little faster. On a few occasions, basic pensions have increased by significantly more than prices. For the central projections, it has been assumed that, over the long term, the Government will increase basic pensions in line with prices. However, it should be noted that, under conditions of sustained real earnings growth, the basic pension would decline in value relative to average earnings. Accordingly, variant projections have been prepared on the assumption that the Government will increase basic pensions in line with earnings increases.

### **Contributory pensions in payment**

- 5.10 Since the inception of the NPF, contributory pensions in payment have been increased, at the discretion of the Minister, broadly in line with prices (the CPI). For the central projections, it has been assumed that this policy will continue, and that contributory pensions will increase in line with prices after they come into payment.
- 5.11 However, a period of sustained real earnings growth would lead to a decline in the value of contributory pensions in payment, relative to earnings. Accordingly, variant projections have also been prepared on the assumption that the Government will increase contributory pensions in payment in line with earnings increases. On this assumption, contributory pensions in payment would maintain their value relative to the assumed value of pension points for new retirements.

### **Rate of investment return**

- 5.12 In order to assess the future financial viability of the Fund over the long-term, it is also necessary to consider the rate of investment return earned on the assets of the Fund. The Fund's liabilities are, broadly speaking, related to price and/or earnings inflation, and so it is appropriate to consider the future rate of return in excess of price (or earnings) increases.
- 5.13 The investment policy of the Fund is governed by the objectives set out in Section 38(1) of the National Pensions Act, as follows:
- Subject to the Finance and Audit Act, any surplus remaining in the Fund may be held on deposit with the Government or invested in such manner as the NPF and NSF Investment Committee set up under sub-section (2) may determine, regard being had to:*
- (a) the need for an appropriate level of liquidity in the Fund;*
  - (b) the need to secure the future value of the Fund;*
  - (c) the need for national development; and*
  - (d) any advice the NPF and NSF Investment Committee may receive from the Board.*
- 5.14 The members of the Investment Committee are appointed in accordance with Section 38(3) of the National Pensions Act. Further to the Sugar Industry Efficiency Act 2001, the Investment Committee is responsible for the investment of the Fund.
- 5.15 To some extent, there is a potential conflict between the Fund's investment objectives. In particular, the pursuance of objective (b) – to secure the future value of the Fund – would seem to imply an investment policy whose primary aim would be to maximise the return on the assets subject to ensuring the security of the Fund. On the other hand, objective (c) – to pay regard to the need for national development – might limit the scope of possible assets, thus detracting from the maximisation of the investment return.
- 5.16 As at March 2006, over half of the Fund's assets were invested in Mauritius Government Stocks & Bonds and Treasury Bills. It might be possible to secure a higher overall return on the Fund's assets by reducing the government-related investments, but the requirement to maintain an appropriate level of liquidity and the security of the investments must remain paramount.
- 5.17 We have not been asked to comment explicitly on the suitability of the assets in which the NPF invests, but we would be happy to provide further comments on this if that would be helpful.
- 5.18 Table 3 sets out the Fund's estimated annual rates of return on investments over the past 10 years, together with the corresponding rates of price and earnings inflation. The rates of return have been calculated based on items identified as investment income in the Fund Accounts (although we understand that unrealised gains on certain assets and currency gains may not be taken into account).

**Table 3 – Rates of investment return, price increases and earnings increases**

<b>Year ending 30 June</b>	<b>Rate of return <sup>1</sup></b>	<b>Price increases</b>	<b>Earnings increases</b>
1996	11.2%	5.8%	7.0%
1997	10.4%	7.9%	11.0%
1998	15.2%	5.4%	8.0%
1999	10.9%	7.9%	8.6%
2000	10.9%	5.3%	8.8%
2001	10.7%	4.4%	5.5%
2002	10.5%	6.3%	6.5%
2003	10.6%	5.1%	10.9%
2004	9.2%	3.9%	8.1%
2005	7.5% <sup>2</sup>	5.6%	4.4%
<b>Average</b>	<b>10.7%</b>	<b>5.8%</b>	<b>7.9%</b>

1. May exclude some unrealised gains and currency gains/losses. See paragraph 5.18
2. Rate of return for 2005 is inconsistent with that for earlier years due to change in Fund's asset valuation method.

5.19 Table 4 shows the estimated annual rates of investment return in excess of price increases and earnings increases over the past 10 years.

**Table 4 – Rates of investment return in excess of increases in prices and earnings**

<b>Year ending 30 June</b>	<b>Rate of return in excess of</b>	
	<b>Prices</b>	<b>Earnings</b>
1996	5.1%	3.9%
1997	2.3%	- 0.5%
1998	9.3%	6.7%
1999	2.8%	2.1%
2000	5.3%	1.9%
2001	6.1%	5.0%
2002	4.0%	3.8%
2003	5.2%	- 0.2%
2004	5.1%	1.0%
2005	1.8%	3.0%
<b>Average</b>	<b>4.7%</b>	<b>2.6%</b>

- 5.20 Table 3 indicates that, over the ten years ending 30 June 2005, the average rate of investment return on the Fund's assets was about 11% a year, relative to average price inflation of 6% a year and average earnings increases of 8% a year. Over this period, therefore, the Fund earned an average real rate of return of about 4¾% a year in excess of prices (or 2½% a year in excess of earnings), as shown in Table 4. It should be noted, however, that the experience of the past ten years is not necessarily a reliable guide to the long-term future.
- 5.21 For the central projection of this review, we have assumed that the Fund's investments will earn a real rate of return of 4% a year (in excess of prices). In conjunction with the assumed rate of real earnings growth (of 2% a year), this is equivalent to assuming a return of 2% a year in excess of earnings increases. This is a long-term assumption and is not intended to be an investment target. Actual returns in the fund may be higher or lower than this.
- 5.22 In order to indicate the sensitivity of the future progress of the Fund to the assumed rate of investment return, alternative projections have been produced assuming that the real rate of return (in excess of prices) will be 3% a year or 5% a year.
- 5.23 These are the same assumptions as were used for the previous review.

#### **Financial terms of projections**

- 5.24 If future inflation were assumed to be similar to recent levels, then the amounts of income and outgo in cash terms would increase rapidly over the 40 years covered by this report. However, these amounts would only be meaningful if compared against corresponding future estimates for the gross national product, total earnings, etc. Even then, it would be difficult to compare these amounts in terms of their purchasing power with the corresponding amounts at the present time. The projections are, therefore, expressed in equivalent present day terms. The estimates of benefit expenditure and contribution income are expressed in constant 2004-05 price terms.

## **6 Methods and assumptions for contributory pensions**

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- 6.1 This section describes the methods and assumptions underlying the projections of the numbers of contributors, amounts of contributions, and the numbers and amounts of contributory pensions in payment. This section also describes the assumptions relating to the estimates of future administration costs.

### **Earnings limits for contributions**

- 6.2 The earnings floor and ceiling are increased from time to time (annually in recent years). Up to 2000, these increases had generally reflected increases in the CPI (ie price inflation). Since 2002, the earnings floor and ceiling have been increased broadly in line with earnings increases.
- 6.3 If the floor were to be increased over time by less than the movement in earnings, it would mean that very low wage earners would gradually become liable to pay contributions. If the ceiling were to fall relative to earnings, those with higher earnings would be paying contributions on a steadily decreasing proportion of their earnings. Conversely if the floor and ceiling were to be increased over time by more than the movement in average earnings, it would mean that low wage earners who are currently members would become excluded from the Scheme and that those with higher earnings would pay contributions on an increasing proportion of their earnings. Either change would alter the shape of the Scheme from that originally intended. If such changes are to occur they should be as a result of deliberate policy decisions by the Government.
- 6.4 It has therefore been assumed that, over the long term, the earnings floor and ceiling will both increase in line with general increases in earnings. This implies that, other things being equal, both the proportion of employees contributing to the Scheme, and the amount of contribution income expressed as a proportion of total earnings, should not change significantly over time. This assumption is the same as that adopted for the previous review.

### **Projected numbers of contributors**

- 6.5 The first stage of projecting future numbers of contributors was to estimate the total numbers in employment (separately for each sex and each age group), by applying age-specific and sex-specific economic activity rates to the projected population of working age.
- 6.6 Economic activity rates were developed from current information on the labour market. According to this data, the rate of unemployment in the year ending 30 June 2005 was almost 10%. For the purposes of this review, the long-term rate of unemployment has been assumed to be about 5%. This is considered to be a reasonable basis for long-term estimates of this nature and is the same as that assumed at the 2000 review. In order to estimate future numbers in employment, the current activity rates (by sex and age) were assumed to apply with only minor adjustments.

- 6.7 The second stage was to develop age- and sex-related factors expressing the number of contributors as a proportion of the number employed. These factors were developed from analysis of the data on contributors and contributions for 2000 to 2005, together with other employment data. In order to derive the projected numbers of contributors, these factors were assumed to apply in future years and were applied to the projected numbers in employment.
- 6.8 It has effectively been assumed that, over the period covered by the review, the number of contributors to the Fund will remain a broadly constant proportion of the population of working age, for each sex and in each age group.
- 6.9 Table 5 summarises the estimated future numbers of contributors derived using the methods and assumptions described in paragraphs 6.2 to 6.8. The numbers increase steadily over the next 15 years, to a total some 12% higher than at present, and then remain broadly constant thereafter.

**Table 5 – Projected numbers of contributors**

	thousands		
Year ending 30 June	Men	Women	Total
2005	186	120	306
2010	196	136	332
2015	201	140	341
2020	203	140	343
2025	203	139	342
2030	203	139	342
2035	203	137	340
2040	202	136	338
2045	200	134	334

#### **Higher rate contributors**

- 6.10 Under prescribed circumstances, employees and employers can choose to pay the higher rate of contribution. However, it appears that very few higher rate contributions are paid on a voluntary basis. Thus, it has been assumed that the only employees paying higher rate contributions in future will be those employed in the sugar industry.
- 6.11 Although it is reasonable to assume that the total numbers of contributors will move in line with the population of working age, it may not be appropriate to assume that the number employed in the sugar industry will change in a similar way. The number of employees required by the sugar industry is likely to be limited and has fallen over the past five years. For the purpose of the review, it has been assumed that the number employed in the sugar industry, and so paying the higher rate of contributions, will remain constant at about 7,700.

**Other contributors**

- 6.12 Scheme membership is also open to the self-employed on a voluntary basis. To date, however, voluntary membership has been negligible. Therefore, for the purposes of this review, membership by the self-employed has been ignored.

**Projected amounts of contributions**

- 6.13 In order to estimate the amounts of future contributions, it has been assumed that the distribution of earnings of current contributors (subdivided by sex and age) will remain unchanged, and that contributors' earnings will increase in line with general increases in earnings. For the purpose of the central projections, it has been assumed that contributions will remain at their current rate of 9% of insurable earnings (13½% for higher rate contributors).

**Projected contributory pensions in payment**

- 6.14 Table 6 summarises the estimated future numbers of contributory retirement pensioners (excluding widows) over age 60.

**Table 6 – Projected numbers of contributory retirement pensioners**

	thousands		
Year ending 30 June	Men	Women	Total
2005	20	18	38
2010	28	26	54
2015	42	37	79
2020	57	48	105
2025	69	58	127
2030	78	65	143
2035	83	70	153
2040	89	76	165
2045	94	80	174

- 6.15 Estimates of future expenditure on contributory retirement pension allow for the period over which each group of members can pay contributions before retirement. The number of pension points projected to come into payment (at age 60) for a group of members is the sum of the points accrued as at 30 June 2005 plus the points arising from future contributions (as described earlier in this Section), allowing for the enhancements described in Appendix A.
- 6.16 The current cost of guaranteed minimum pensions is estimated to be about 5% of expenditure on contributory retirement pensions. However, in the long term, it is expected that most contributory pensions will exceed the guaranteed minimum. It has been assumed that the cost of the guarantee will be a decreasing percentage of total expenditure on contributory retirement pensions.
- 6.17 The assumptions adopted for the revaluation of pension points and increases to contributory pensions in payment were discussed in Section 5.

- 6.18 Estimates of future expenditure on contributory widow's pension are derived from the estimates of retirement pension, and include allowance for the proportions entitled to the full rate or the two-thirds rate of widow's pension.
- 6.19 Future expenditure on contributory invalidity pension is estimated by assuming that the future proportion of contributors (by age and sex) entitled to contributory invalidity pensions will remain broadly unchanged. The estimates allow for the increasing number of accrued pension points as the Scheme matures. Allowance is also included for the two-thirds benefit rate payable in cases where there are no dependent children.
- 6.20 For this review, data has been provided on the amounts of contributory pensions in payment. This data was not available for previous reviews. This has enabled a more accurate assessment of future contributory pensions outgo to be made. In respect of contributory retirement pension and contributory invalidity pension, this has not led to any significant revision of projected outgo. In respect of contributory widow's pension, it has led to a downward revision of projected outgo.
- 6.21 The amounts of contributory orphan's pension and contribution refunds are very small and approximate estimating methods have been adopted.

#### **Administration costs**

- 6.22 The Fund must meet the costs of administering the collection of contributions and the payment of contributory pensions and industrial injury pensions. The Government meets the cost of paying basic pensions. Over the longer term, the proportion of expenses to be met from the Fund might be expected to increase due to the increasing significance of contributory pensions. On the other hand, improved efficiency should reduce total administration costs over the longer term, relative to earnings.
- 6.23 Based on an analysis of the expenses incurred by the Fund over the five years ending 30 June 2005, it has been assumed that administration costs to be met by the Fund will be a reducing percentage of the combined amount of contribution income and contributory benefit expenditure. Initially, expenses have been assumed to be 6% of the total of contribution income and contributory benefit expenditure, declining to about 4% by the end of the projection period. This is in line with the assumptions adopted for the previous review. Minor variations from this assumption are unlikely to materially affect the conclusions of the review.

## **7 Results – Basic pensions**

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- 7.1 Appendix E summarises the basic pension provisions, and the methods and assumptions used to estimate the future numbers of beneficiaries and expenditure.

### **Rate of increase of basic pensions**

- 7.2 As discussed in paragraph 5.9, the implications of increasing basic pensions in line with either prices or earnings are significant. Currently the principal rate of basic pension is a little over 18% of average earnings. If basic pensions were to be increased in future in line with earnings, then the rate of basic pension would remain around its current percentage of average earnings. However, if basic pensions were to be increased in line with prices, then by 2045 the rates of basic pension would fall to around 8% of average earnings (assuming real earnings growth of 2% a year).

### **Central projection - basic pensions increase in line with prices**

- 7.3 Table 7 shows projected expenditure on basic pensions, assuming that the rates of basic pensions increase in line with prices in the future. The estimates in Table 7 are expressed in constant 2004-05 price terms.
- 7.4 The bulk of expenditure on basic pensions is in respect of basic retirement pension. At present, about 70% of expenditure is in respect of retirement pension whilst widow's and invalidity pensions each account for some 15% of expenditure.
- 7.5 Total expenditure on basic pensions is expected to almost double by 2025 and to increase by a further 35% between 2025 and 2045, in constant price terms. The overall increase of some 160% is mainly attributable to the cost of basic retirement pensions which is expected to more than triple over the 40-year period, in constant price terms. This is due to the significant increase in the population over pension age, as shown in Table 1 (in Section 4). The projected number of pensioners is still increasing at the end of the 40-year projection period.
- 7.6 The projected increase in expenditure on basic pensions to widows and invalids mainly reflects the increase in the population of working age (ie those potentially eligible to these pensions). In addition, as the population of working age becomes increasingly concentrated at older ages, with a higher incidence of benefit entitlement, both widows and invalids will represent higher overall proportions of the population of working age than at present. Consequently, expenditure in respect of these benefits is projected to increase in constant price terms for most of the projection period, though not to the same degree as retirement pensions.
- 7.7 The Government is responsible for meeting the full cost of all basic pensions by way of the Government Grant. (The Government Grant also includes the cost of paying the guaranteed minimum level of contributory pension.) Accordingly, the financing of basic pensions does not affect the financial balance of the Fund. It is appropriate, however, that the Government should be aware of the projected future increases in expenditure on basic pensions, and consider their implications.

**Table 7 – Projected expenditure on basic pensions<sup>1</sup>: Future increases in line with prices**

(Rs million)

<b>Year ending 30 June</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>
<b>Basic (non-contributory) pensions</b>									
Retirement pension <sup>2</sup>	3,493	4,104	5,177	6,366	7,643	8,812	9,573	10,513	11,152
Widow's pension <sup>3</sup>	641	726	774	805	808	815	837	816	792
Invalidity pension	869	935	968	988	984	986	1,001	985	965
Orphan's pension and guardians allowance	5	6	6	6	6	6	6	6	6
Inmate's allowance	6	6	6	7	8	9	9	10	10
<b>Total basic pensions</b>	<b>5,014</b>	<b>5,777</b>	<b>6,931</b>	<b>8,172</b>	<b>9,449</b>	<b>10,628</b>	<b>11,426</b>	<b>12,330</b>	<b>12,925</b>

1. All estimates are expressed in constant 2004-05 price terms.
2. Basic pension payable to widows over age 60 is included with retirement pension.
3. Basic widow's pension includes only that payable to widows below age 60.

### Comparison with GDP

- 7.8 In order to consider whether the increase in expenditure shown in Table 7 is 'sustainable', the projected expenditure on basic pensions can be compared with an appropriate measure of the income base from which the expenditure will be supported. Most commonly, such a comparison would be with the total earnings in the economy, or the country's Gross Domestic Product (GDP). Changes in GDP are likely to be closely correlated with earnings growth and changes in the employed population.
- 7.9 Table 8 shows, at five yearly intervals, the projected expenditure on basic pensions (from Table 7) and the estimated GDP (which is assumed to change in line with the employed population and real earnings growth of 2% a year), in constant price terms. Table 8 also shows the projected expenditure expressed as a percentage of estimated GDP.

**Table 8 – Expenditure on basic pensions as percent of GDP**

**Basic pensions increase in line with prices**

Constant 2004-05 price terms

Year ending 30 June	Projected expenditure <i>Rs million</i>	Estimated GDP <sup>1</sup> <i>Rs million</i>	Expenditure as a percent of GDP
2005	5,014	157,200	3.2%
2010	5,777	189,500	3.0%
2015	6,931	215,500	3.2%
2020	8,172	240,900	3.4%
2025	9,449	266,500	3.5%
2030	10,628	294,800	3.6%
2035	11,426	325,700	3.5%
2040	12,330	357,500	3.4%
2045	12,925	391,900	3.3%

1. At basic prices.

- 7.10 Table 8 shows that, if basic pensions are assumed to increase in line with price increases, then expenditure on basic pensions, expressed as a percentage of GDP, is not expected to change significantly over the next 40 years. The increase in the projected numbers of pensioners is almost offset by the expected increase in GDP due to real earnings growth.

### Variant projection – basic pensions increase in line with earnings

- 7.11 Table 9 shows projected expenditure on basic pensions if it were to be assumed that the rates of basic pensions increase in line with earnings, instead of prices, in the future. The estimates in Table 9 are expressed in constant 2004-05 price terms.

**Table 9 – Projected expenditure on basic pensions<sup>1</sup>: Future increases in line with earnings**

(Rs million)

<b>Year ending 30 June</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>
<b>Basic (non-contributory) pensions</b>									
Retirement pension <sup>2</sup>	3,493	4,532	6,311	8,570	11,362	14,461	17,342	21,026	24,627
Widow's pension <sup>3</sup>	641	801	942	1,083	1,199	1,336	1,515	1,629	1,748
Invalidity pension	869	1,033	1,180	1,330	1,464	1,619	1,814	1,971	2,134
Orphan's pension and guardians allowance	5	7	7	8	9	10	11	11	12
Inmate's allowance	6	7	8	9	12	14	17	20	23
<b>Total basic pensions</b>	<b>5,014</b>	<b>6,380</b>	<b>8,448</b>	<b>11,000</b>	<b>14,046</b>	<b>17,440</b>	<b>20,699</b>	<b>24,657</b>	<b>28,544</b>

1. All estimates are expressed in constant 2004-05 price terms.
2. Basic pension payable to widows over age 60 is included with retirement pension.
3. Basic widow's pension includes only that payable to widows below age 60.

- 7.12 Table 10 compares projected expenditure on basic pensions and estimated GDP, assuming that basic pensions increase in line with earnings.

**Table 10 – Expenditure on basic pensions as percent of GDP**

**Basic pensions increase in line with earnings**

Constant 2004-05 price terms

Year ending 30 June	Projected expenditure <i>Rs million</i>	Estimated GDP <sup>1</sup> <i>Rs million</i>	Expenditure as a percent of GDP
2005	5,014	157,200	3.2%
2010	6,380	189,500	3.4%
2015	8,448	215,500	3.9%
2020	11,000	240,900	4.6%
2025	14,046	266,500	5.3%
2030	17,440	294,800	5.9%
2035	20,699	325,700	6.4%
2040	24,657	357,500	6.9%
2045	28,544	391,900	7.3%

1. At basic prices.

- 7.13 Table 10 shows that, if the rates of basic pensions are assumed to increase in line with earnings, then expenditure on basic pensions is expected to increase significantly as a proportion of GDP. Over the 40 years from 2005, expenditure on basic pensions is projected to increase from about 3% of GDP to about 7% of GDP. Both expenditure and GDP are projected to increase steadily due to real earnings growth. However, expenditure increases at a faster rate than GDP, principally because the number of pensioners is projected to increase significantly faster than the employed population.
- 7.14 It is outside the scope of this report to consider in detail the wider effects of such a projected increase in expenditure if basic pensions were to increase in line with earnings. In order to consider the overall impact, it would be necessary to review other competing claims on future Government financial resources and the various sources of Government income.

**Variant projections – Higher GDP growth**

- 7.15 Tables 8 and 10 assume that GDP, in constant price terms, will increase broadly in line with real earnings growth (of 2% a year) and changes in the employed population. However, it might be appropriate to assume that GDP will increase at a faster rate than this. If GDP were instead assumed to increase by 1% a year in excess of earnings growth, then future expenditure on basic pensions would represent a lower percentage of GDP than in Tables 8 and 10 as illustrated below.
- 7.16 Table 11 compares projected expenditure on basic pensions and estimated GDP, assuming that basic pensions increase in line with prices and GDP increases by 1% a year in excess of earnings growth.

**Table 11 – Expenditure on basic pensions as percent of GDP**

**Basic pensions increase in line with prices, GDP growth 1% higher than earnings**

Constant 2004-05 price terms

Year ending 30 June	Projected expenditure <i>Rs million</i>	Estimated GDP <sup>1</sup> <i>Rs million</i>	Expenditure as a percent of GDP
2005	5,014	157,200	3.2%
2010	5,777	198,900	2.9%
2015	6,931	237,600	2.9%
2020	8,172	278,900	2.9%
2025	9,449	323,900	2.9%
2030	10,628	376,200	2.8%
2035	11,426	436,500	2.6%
2040	12,330	503,000	2.5%
2045	12,925	579,000	2.2%

1. At basic prices.

- 7.17 If GDP were assumed to increase by 1% a year in excess of earnings, then expenditure on basic pensions is projected to be 2.2% of GDP in 2045 (compared to 3.3% assuming that GDP increases in line with earnings – see Table 8).

- 7.18 Table 12 compares projected expenditure on basic pensions and estimated GDP, assuming that basic pensions increase in line with earnings and GDP increases by 1% a year in excess of earnings growth.

**Table 12 – Expenditure on basic pensions as percent of GDP**

**Basic pensions increase in line with earnings, GDP growth 1% higher than earnings**

Constant 2004-05 price terms

Year ending 30 June	Projected expenditure <i>Rs million</i>	Estimated GDP <sup>1</sup> <i>Rs million</i>	Expenditure as a percent of GDP
2005	5,014	157,200	3.2%
2010	6,380	198,900	3.2%
2015	8,448	237,600	3.6%
2020	11,000	278,900	3.9%
2025	14,046	323,900	4.3%
2030	17,440	376,200	4.6%
2035	20,699	436,500	4.7%
2040	24,657	503,000	4.9%
2045	28,544	579,000	4.9%

1. At basic prices.

- 7.19 If GDP were assumed to increase by 1% a year in excess of earnings, then expenditure on basic pensions is projected to be 4.9% of GDP in 2045 (compared to 7.3% assuming that GDP increases in line with earnings – see Table 10).

## **8 Results: Contributory pensions**

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- 8.1 This section presents the results of the projections of contribution income and contributory benefit expenditure on the central assumptions.
- 8.2 Whereas the Government finances basic pension expenditure on a pay-as-you-go basis (via the Government Grant), contributory pensions are funded through the NPF. Contribution income that is not required to meet expenditure on contributory benefits in the current period is invested. The aim is for the accumulated fund to meet all future expenditure on the benefits accrued to date.
- 8.3 As well as showing projected income and outgo, this section therefore considers whether the Fund's assets are sufficient to meet projected future expenditure on benefits already accrued. It also assesses the adequacy of the current contribution rate and 'cost to value' ratio of pension points.

### **Principal assumptions for central projection**

- 8.4 The main assumptions underlying the central projection are discussed in earlier sections of this report. Briefly the assumptions can be summarised as follows:
- (i) the combined contribution rate is 9% (higher rate 13½%);
  - (ii) the pension point 'cost : value' ratio remains at 11:1;
  - (iii) the cost and value of pension points increase in line with earnings;
  - (iv) the earnings floor and ceiling increase in line with earnings;
  - (v) contributory pensions in payment increase in line with prices;
  - (vi) earnings increase at 2% a year in excess of prices; and
  - (vii) the rate of return on the Fund's assets will be 4% a year in excess of prices.

### **Results of central projection**

- 8.5 Table 13 shows a detailed breakdown of projected expenditure on contributory benefits. Table 14 summarises the projected income and expenditure of the NPF at five-yearly intervals for the period 2005 to 2045, including the projected expenditure on basic pensions and the amount of the Government Grant. (In addition to the cost of basic pensions, the Government Grant also provides for the cost of the guaranteed minimum level of contributory pension.) Table 14 also shows the projected investment income and the projected Fund balance at five-yearly intervals. All amounts are expressed in constant 2004-05 price terms.
- 8.6 Table 14 shows that contribution income is projected to rise by almost 30% in constant price terms over the next 10 years and to increase at a slower rate thereafter. This reflects the projected increase in the population of working age over the next 10 years, after which the population of working age stabilises (due to the projected reduction in the birth rate over the next 20 years). Throughout the period, real earnings growth produces a steady increase in contribution income, when expressed in constant price terms.

**Table 13 – Estimated expenditure on contributory pensions<sup>1</sup>: Central projection**

	(Rs million)								
<b>Year ending 30 June</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>
<b>Contributory pensions</b>									
Retirement pension <sup>2</sup>	460	735	1,058	1,424	1,873	2,320	2,718	3,248	3,732
Widow's pension <sup>3</sup>	89	185	305	447	601	760	919	1,074	1,226
Invalidity pension	23	30	39	46	53	61	71	78	85
Return of contributions	8	16	17	18	17	17	16	16	16
<b>Total contributory pensions</b>	<b>580</b>	<b>966</b>	<b>1,419</b>	<b>1,935</b>	<b>2,544</b>	<b>3,158</b>	<b>3,724</b>	<b>4,416</b>	<b>5,059</b>
Retirement pension minimum guarantee <sup>4</sup>	36	29	32	36	37	35	27	32	37

1. All estimates are expressed in constant 2004-05 price terms.
2. Contributory retirement pension includes the additional amounts to meet the guaranteed minimum level (see 4).
3. Contributory widow's pension includes pensions payable to widows under and over age 60. Also includes contributory orphan's pensions.
4. Included in contributory retirement pension. Cost met by Government Grant.

**Table 14 – Estimated income, expenditure and balance of the Fund<sup>1</sup>: Central projection**

(Rs million)

Year ending 30 June	2005	2010	2015	2020	2025	2030	2035	2040	2045
<b>Income</b>									
Government Grant <sup>2</sup>	5,050	5,806	6,963	8,208	9,486	10,663	11,453	12,362	12,962
Contribution income	1,367	1,549	1,752	1,937	2,124	2,342	2,574	2,816	3,082
<b>Total income <sup>3</sup></b>	<b>6,417</b>	<b>7,355</b>	<b>8,715</b>	<b>10,145</b>	<b>11,610</b>	<b>13,005</b>	<b>14,027</b>	<b>15,178</b>	<b>16,044</b>
<b>Expenditure</b>									
Basic pensions	5,014	5,777	6,931	8,172	9,449	10,628	11,426	12,330	12,925
Contributory pensions	580	966	1,419	1,935	2,544	3,158	3,724	4,416	5,059
Industrial injury pensions	27	35	50	60	65	80	85	95	105
Lump sum payments <sup>4</sup>	3	2	1	0	0	0	0	0	0
Administration	111	147	177	206	237	265	287	311	330
<b>Total expenditure <sup>5</sup></b>	<b>5,735</b>	<b>6,927</b>	<b>8,578</b>	<b>10,373</b>	<b>12,295</b>	<b>14,131</b>	<b>15,522</b>	<b>17,152</b>	<b>18,419</b>
Excess of income over expenditure	682	428	137	-228	-685	-1,126	-1,495	-1,974	-2,375
Investment income	2,678	1,912	2,392	2,907	3,445	4,002	4,593	5,221	5,889
<b>Fund balance at end of year</b>	<b>38,156</b>	<b>49,440</b>	<b>61,660</b>	<b>74,740</b>	<b>88,370</b>	<b>102,510</b>	<b>117,540</b>	<b>133,460</b>	<b>150,480</b>
Fund balance as multiple of outgo on contributory & industrial injury pensions	63	49	42	37	34	32	31	30	29

1. All estimates are expressed in constant 2004-05 price terms.
2. The Government Grant meets the cost of basic pensions and the cost of the guaranteed minimum level of contributory retirement pension.
3. Excludes other income in year ending 30 June 2005.
4. Lump sum payments to former members of the Sugar Industry Pension Fund.
5. Excludes other expenditure in year ending 30 June 2005.

- 8.7 Current expenditure on contributory pensions is still relatively modest. The projected increase in contributory pension expenditure in constant price terms reflects the increasing numbers in the population over pension age, and the increasing maturity of the Scheme. This second factor is due partly to the increase in the projected number of pensioners relative to the population and partly to the increase in the average number of pension points accrued at retirement. Pensions at retirement, expressed in constant price terms, also increase because of the effect of real earnings growth.
- 8.8 Currently, contribution income is much greater than the combined expenditure on contributory pensions, industrial injury pensions and administration costs. Over the next 10 years, it is estimated that substantial amounts of excess income will be available for investment, although the excess amounts will gradually decline. It is estimated that benefit expenditure and administration costs will begin to exceed contribution income by 2020. Thereafter, as expenditure on pensions continues to increase at a faster rate than contribution income, benefit expenditure and administration costs are projected to exceed contribution income by an increasing margin. This shortfall must be met from investment income and/or the proceeds from the sale of assets.
- 8.9 As at June 2005, the Fund amounted to some Rs 38 billion, over sixty times the annual level of expenditure on contributory and industrial injury pensions. By the year 2025, the Fund is projected to have increased to over Rs 88 billion in constant 2004-05 price terms and, by 2045, the projected Fund balance is over Rs 150 billion, equivalent to about 29 times' annual expenditure on contributory and industrial injury pensions. This projected increase in the Fund's assets over the next 40 years is due to the combined contribution income and investment income exceeding benefit outgo and administration costs for each year in the projection period.

#### **Comparison with previous report**

- 8.10 The projections of income and expenditure shown in Table 14 can be compared against those in Table 12 of the previous report. However, it should be borne in mind that the amounts shown in the current report are expressed in constant 2004-05 price terms, whereas those in the previous report were expressed in constant 1999-2000 terms.
- 8.11 Contributions data and information from the accounts indicates that contribution income over the past five years has been lower than projected in the previous review. We have therefore revised our projections of future contribution income down accordingly. This also leads to lower projected outgo on contributory pensions in the longer term (all else being equal).
- 8.12 Taking this into account, together with the refinements to the projections of contributory widow's benefits and some minor refinements to the estimating methods, the projected amounts of contribution income, basic pensions and contributory pensions shown in Table 14 are broadly consistent with those shown in Table 12 in the previous report.

### **Contribution rate**

- 8.13 The current contribution rate of 9% (or 13½% for higher rate contributors) is specified in the Act. Pensions at retirement are related to contributions by means of pension points, which are purchased when contributions are paid and converted to pension at the time of retirement. For the central projection, it has been assumed that the cost and value of pension points will increase in line with earnings so that the ratio of the cost of a pension point to its value one year later will remain at the level of 11:1.
- 8.14 Broadly, these assumptions imply a pension of about 1/120<sup>th</sup> (1/80<sup>th</sup> for higher rate contributors) of total career earnings, revalued to the year before retirement in line with increases in average earnings. Over a forty-year career, the pension would be about one third (one-half for higher rate contributors) of average annual earnings revalued to the year before retirement.
- 8.15 In the discussion which follows, it has been assumed that the intention is to maintain the current accrual rate of 1/120<sup>th</sup> (1/80<sup>th</sup> for higher rate contributors). It is then relevant to consider the contribution rate and ratio of the cost of a pension point to its value that is sufficient to cover the cost of providing this level of pension. This is because, if current contribution income were to be insufficient to meet outgo, increasing the contribution rate alone would not rectify this, since this would also increase future outgo. Therefore an increase in the contribution rate would need to be considered together with a corresponding increase to the 'cost to value' ratio of pension points.
- 8.16 In respect of *new entrants* to the Scheme (assumed to be age 25 on average), it is estimated that the current contribution rate of 9% is sufficient to meet the cost of benefits in the Scheme, combined with a 'cost to value' ratio of a pension point of 11:1. This includes the costs of contributory pensions (at the level described in paragraph 8.15), industrial injury pensions and administration.
- 8.17 This shows that the current contribution rate and 'cost to value' ratio of pension points are sufficient to meet the cost of future accruals of benefits. We also need to consider the extent to which the current assets of the Fund are sufficient to meet the benefits that have already accrued.

### **Capital values**

- 8.18 The NPF has been designed so that the cost of future expenditure on contributory benefits will be met by a combination of contributions paid into the Fund, and investment return earned on the Fund's assets.
- 8.19 Contribution income that is not required to meet expenditure on contributory benefits in the current period is invested. The aim is for the total contribution income received from each cohort of members, along with the investment return it generates, to be sufficient to cover all contributory benefit expenditure in respect of this cohort of members, and the associated administration costs.
- 8.20 In order to assess whether the Fund is meeting this aim, it is necessary to compare the discounted (or capital) values of future income and expenditure, also taking into account the existing assets of the Fund.

- 8.21 Such an assessment is usually carried out in respect of the current generation of contributors, ie excluding future new entrants. Capital values have been determined by discounting, at a rate of 4% a year in excess of prices, the projected income and expenditure in respect of past contributors and the current generation of contributors. This rate of return is the same as that used to project the Fund balance in Table 14.
- 8.22 Table 15 summarises the capital values, for existing members, of the contributory benefits accrued to date and contributory benefits in respect of future contributions by existing members. These capital values include projected industrial injury pensions and administration costs. This can be compared to future contribution income (in respect of current contributors), together with the value of the existing assets. The existing assets of the Scheme are taken into account at market value, which is equivalent to assuming that the investments will generate a future real rate of return (in excess of prices) of 4% a year. Table 15 is referred to as the valuation balance sheet.

**Table 15 – Valuation balance sheet of NPF as at 30 June 2005**

***Central projection***

<b>Present value of</b>	<b>(Rs billion)</b>
Accrued benefits	33
Future service benefits	25
<b><i>Total liabilities</i></b>	<b>58</b>
Current investments	38
Future contributions (@ 9%)	25
<b><i>Total assets</i></b>	<b>63</b>
<b><i>Surplus (deficit)</i></b>	<b>5</b>
Contribution rate required for new entrants to the Scheme	9%

- 8.23 Table 15 indicates that there is a surplus of Rs 5 billion in the Fund, compared with a deficit of Rs 3 billion in the previous report. There are two main factors that have contributed to this increase in surplus.
- 8.24 Firstly, the investment return of the Fund has been slightly higher than expected since the previous review. This, together with other income earned by the Fund and the inclusion of a reserve of Rs 2.6 billion due to a revision of the asset valuation method, has contributed to the surplus.

- 8.25 Secondly, for this review we have been provided with data on amounts of contributory widow's pension in payment. This data had not been available for previous reviews. This additional data has enabled us to refine our estimates of future expenditure on contributory widow's pension over the projection period. This has resulted in a reduction in projected expenditure on widow's benefits.
- 8.26 The current surplus in the valuation balance sheet position suggests that existing members could contribute at a rate slightly below 9% for their remaining working lifetimes, and the assets built up would still be sufficient to meet the cost of paying contributory benefits in respect of these members, together with the associated administration costs. However, the surplus generated by excess investment returns over the past five years could easily be reversed if investment returns were poorer than expected over the next five years.
- 8.27 As discussed in paragraphs 8.13 to 8.17, the current 9% contribution rate is projected to be adequate in respect of new entrants to the Scheme.

#### **Effect of the Voluntary Retirement Scheme (VRS)**

- 8.28 The introduction of the VRS in the sugar industry allows certain employees, on leaving the sugar industry, to take early payment of an actuarially reduced contributory retirement pension.
- 8.29 Since 2001, over five and a half thousand people have retired under the VRS. The majority of these retirements came in the first two years after the introduction of the VRS. Since then there have been around 300 to 400 retirements under the VRS each year.
- 8.30 The impact of these retirements has been to increase expenditure on contributory retirement benefits in the short-term (as pensions in respect of these members have come into payment earlier than they would have done otherwise). It is estimated that expenditure on contributory pensions between 2001 and 2005 has been around Rs 100 million higher than it would have been, had the VRS not been introduced.
- 8.31 However, going forward, payments to these members will be lower than they would otherwise have been, as an actuarial reduction factor has been applied to pension payments to these members.
- 8.32 The actuarial reduction factors have been set to be broadly cost neutral to the Scheme for members retiring at age 50. However, for simplicity, unisex factors have been used, and have been expressed as a simple reduction factor of 4% a year for each year retired early (ie the factor at age 59 is 0.96, the factor at age 58 is 0.92 and so on with a factor at age 50 of 0.6).
- 8.33 A consequence of using this method is that early retirements for males (which occur from ages 55 to 59) incur a slight cost to the Scheme. For example, the cost neutral factor for a male retiring at age 55 is around 0.75 (on the basis used to prepare the factors) compared to the factor of 0.8 which is actually used.
- 8.34 To date, the pattern of retirements under the VRS has worsened the valuation balance sheet position of the Scheme by about Rs 50 million (only around 0.2% of the total value of accrued benefits).

- 8.35 To the extent that members may have continued to work had they not been able to retire under the VRS, contribution income has been reduced following the introduction of the VRS. However, the extra pension benefits which those contributions would have provided will not be paid, so the net effect of the reduction in contribution income on the Fund balance will be small.
- 8.36 If the level of retirements under the VRS continues at a similar rate to those from 2003 to 2005, then the overall impact on the NPF should be small. If (as we understand is currently being considered) the option to retire early with a reduced pension is extended more widely to members of the NPF, then the consequences for the NPF would be more significant and it would be appropriate to review any actuarial reduction factors to ensure they remain appropriate.

## 9 Policy variant projections

- 9.1 At the request of the Ministry of Social Security, variant projections of the contributory scheme have been undertaken on a range of alternative policies. This section summarises the results of these policy variant projections.
- 9.2 The main policy assumptions underlying the projections of the contributory scheme are in respect of the following:
- (i) increases to contributory pensions in payment;
  - (ii) increases to the cost and value of a pension point;
  - (iii) increases to the earnings floor and ceiling;
  - (iv) changes to the 'cost to value' ratio of a pension point; and
  - (v) pension age.
- 9.3 In the central projection it is assumed that contributory pensions in payment will increase in line with prices, and that the cost and value of a pension point, and the earnings floor and ceiling, will increase in line with earnings. Pension age is assumed to remain at age 60.

### Pension age remains at 60

- 9.4 Table 16 summarises the assumptions adopted for three policy variant projections (and the central projection), in each of which the current pension age of 60 is retained. In all four projections, the assumed rate of real earnings growth (over prices) is 2% a year and the assumed real rate of investment return (over prices) is 4% a year.

**Table 16 – Assumptions for policy variants P1, P2 and P3**

Assumption	Central C	Variant P1	Variant P2	Variant P3
Increase in contributory pensions in payment	Prices	Earnings <sup>1</sup>	Prices	Prices
Increase in cost and value of pension points	Earnings	Earnings	Prices	Earnings
Increase in earnings floor and ceiling	Earnings	Earnings	Prices	Earnings
Ratio of cost to value of pension points	11:1	11:1	11:1	12:1
Standard rate of contribution	9%	9%	9%	10%

1. Under variant P1 it is also assumed that basic pensions are increased in line with earnings

- 9.5 The detailed results of the policy variant projections P1, P2 and P3 are shown in Appendix F.
- 9.6 Table 17A summarises the projected trend of the Fund balance for these three variants. Table 17B summarises the projected trend of the Fund balance, expressed as a multiple of outgo on contributory and industrial injury pensions in the corresponding year.

**Table 17A – Policy variants: Projected balance of the Fund<sup>1</sup>**

(Rs billion)

Year ending 30 June	Policy variant (pension age 60)			
	Central	P1	P2	P3
2005	38.2	38.2	38.2	38.2
2010	49.4	49.3	49.1	50.0
2015	61.7	60.8	60.2	63.4
2020	74.7	72.5	71.6	78.0
2025	88.4	83.7	83.1	93.5
2030	102.5	93.7	94.8	110.1
2035	117.5	102.7	107.4	128.2
2040	133.5	110.0	121.1	148.0
2045	150.5	115.3	136.7	169.7

1. All estimates are expressed in constant 2004-05 price terms

**Table 17B – Policy variants: Projected balance of the Fund<sup>2</sup>**

Year ending 30 June	Policy variant (pension age 60)			
	Central	P1	P2	P3
2005	63	63	63	63
2010	49	46	50	50
2015	42	38	44	43
2020	37	32	40	39
2025	34	27	38	36
2030	32	24	38	34
2035	31	22	39	33
2040	30	20	40	32
2045	29	18	43	32

2. Expressed as a multiple of outgo on contributory and industrial injury pensions

- 9.7 The results for variant P1 in Tables 17A and 17B indicate that the financial position of the Fund would be worsened if, in future, contributory pensions in payment were to be increased in line with earnings, not prices.
- 9.8 Table 17B shows that policy variants P2 and P3 both lead to an improvement in the financial position of the Fund. The Fund balance in 2045 is projected to be 43 times and 32 times outgo in variants P2 and P3 respectively, compared to 29 times outgo in the central projection (C).
- 9.9 In variant P2, the improvement arises because the value of pensions at retirement is based on career earnings revalued in line with prices, not earnings. In variant P3, the improvement arises because future contribution income is higher (10% of earnings instead of 9%) but the level of benefits payable is broadly unchanged.

- 9.10 Table 18 sets out the valuation balance sheet and the required contribution rate for new entrants for these three policy variants, together with those for the central variant.

**Table 18 – Policy variants: Valuation balance sheet as at 30 June 2005** (Rs billion)

<b>Present value of</b>	<b>Central</b>	<b>P1</b>	<b>P2</b>	<b>P3</b>
Accrued benefits	33	40	28	33
Future service benefits	25	29	16	25
<b>Total liabilities</b>	<b>58</b>	<b>69</b>	<b>44</b>	<b>58</b>
Current investments	38	38	38	38
Future contributions (at 9%)	25	25	19	27 <sup>1</sup>
<b>Total assets</b>	<b>63</b>	<b>63</b>	<b>58</b>	<b>66</b>
<b>Surplus (deficit)</b>	<b>5</b>	<b>(6)</b>	<b>13</b>	<b>7</b>
Required contribution rate for future contributors to the Scheme	9%	10½%	6½%	9%

1. Future contributions paid at 10%

- 9.11 Table 18 shows that the adequacy of the contribution rate is sensitive to policy decisions. Under the central assumptions (policy and financial), the current contribution rate of 9% (combined with a 'cost to value' ratio of pension points of 11:1) is adequate to support the benefits (and administration costs) arising from the contributions, in respect of future contributors to the Scheme.
- 9.12 If pensions in payment were to be increased in line with earnings rather than prices (variant P1), then the contribution rate for future contributors would need to increase by about 1½% of earnings, to 10½% (together with a change in the 'cost to value' ratio of pension points of 13:1) to secure the long-term financial position of the Fund.
- 9.13 On the other hand, if the cost and value of pension points (and pensions in payment) were to increase in line with prices rather than earnings (variant P2), then the contribution rate for new entrants could be reduced by 2½% of earnings, to 6½% (together with a change in the 'cost to value' ratio of pension points to 8:1). However, this would lead to new entrants accruing a target pension of 1/120<sup>th</sup> of career earnings, revalued to the year before retirement in line with increases in **price inflation** (rather than average earnings). Over a forty year career (and assuming earnings increases exceed price inflation by 2% a year on average) this would lead to a member accruing a pension of only around 70% of the target pension of 1/120<sup>th</sup> of career earnings, revalued to the year before retirement in line with increases in **average earnings**.

- 9.14 If the principal contribution rate were changed to 10%, and the 'cost to value' ratio of pension points changed to 12:1 (variant P3), then this would slightly increase the surplus in the Fund. This is because more contribution income would be received, but benefit payments would remain broadly unchanged (as although more units would be accrued, the relative value of the units is reduced by changing the 'cost to value' ratio to 12:1).
- 9.15 The required contribution rate for new contributors for variant P3 is 9%. This, combined with a 'cost to value' ratio of pension points of 11:1 would be sufficient to secure the long-term financial position of the Fund (and would allow new entrants to accrue the target pension of 1/120<sup>th</sup> of career earnings, revalued to the year before retirement in line with increases in average earnings). Alternatively, a contribution rate of 10% combined with a 'cost to value' ratio of pension points of 11:1 could be set. However, this would lead to new entrants accruing a pension of around 1/100<sup>th</sup> of career earnings, revalued to the year before retirement in line with increases in average earnings.

#### Increase in Pension age to 65

- 9.16 Calculations have been carried out to illustrate the effect of increasing pension age from 60 to 65 over the ten-year period from 1 July 2008 to 30 June 2018. Members who will attain age 60 before 1 July 2008 (ie those who were age 57 or above in 2005) are assumed to retire at age 60. Members who will attain age 65 after 31 June 2018 (ie those who were age 52 or below in 2005) are assumed to retire at age 65. Members aged between 52 and 57 in the year 2005 are assumed to retire over the ten-year period 2008 to 2018. It has been assumed that total contribution income is unaffected by the increase in pension age – the increase in employment between ages 60 and 64 being offset by reduced employment at younger ages.
- 9.17 Table 19 summarises the assumptions adopted for the two pension age variants, P4 and P5, and the corresponding projections with pension age 60 (projections C and P2 respectively). In all four projections, the assumed rate of real earnings growth (over prices) is 2% a year and the assumed real rate of investment return (over prices) is 4% a year. It has also been assumed that the ratio of the cost to value of pension points remains at 11 to 1.

**Table 19 – Assumptions for policy variants P2, P4 and P5**

Assumption	Central C	Variant P2	Variant P4	Variant P5
Increase in contributory pensions in payment	Prices	Prices	Prices	Prices
Increase in cost and value of pension points	Earnings	Prices	Earnings	Prices
Increase earnings floor and ceiling	Earnings	Prices	Earnings	Prices
Pension age until 30 June 2008	60	60	60	60
Pension age after 30 June 2008	60	60	65	65

9.18 In addition to the assumptions for policy variants P4 and P5 shown in Table 19, it has been assumed that the change to the new retirement age will be implemented in accordance with the principles set out in the “report of the technical committee held in the context of the forthcoming raising of retirement age from 60 to 65” (dated 14 May 2007), except that a late retirement factor will be applied to pension accrued prior to 1 July 2008. In particular, it has been assumed that the ‘cost to value’ ratio of pension points will remain at 11:1 before the implementation of the change in retirement age.

9.19 Table 20 shows the late retirement factors which we understand will apply to pensions accrued prior to 1 July 2008. These factors have been used for policy variants P4 and P5. The applicable factor is based on the member’s new retirement age in respect of contributions paid after 1 July 2008.

**Table 20 – Late retirement factors**

Retirement age	Late retirement factor
61	1.08
62	1.16
63	1.24
64	1.32
65	1.40

9.20 Table 21A summarises the projected trend of the Fund balance for policy variants P2, P4 and P5 (and for projection C). Table 21B summarises the projected trend of the Fund balance, expressed as a multiple of outgo on contributory and industrial injury pensions in the corresponding year.

**Table 21A – Policy variants: Projected balance of the Fund<sup>1</sup>**

(Rs billion)

Year ending 30 June	Policy variant			
	Central	P2	P4	P5
2005	38.2	38.2	38.2	38.2
2010	49.4	49.1	49.7	49.4
2015	61.7	60.2	63.3	61.8
2020	74.7	71.6	78.7	75.4
2025	88.4	83.1	95.1	89.7
2030	102.5	94.8	112.0	104.5
2035	117.5	107.4	129.7	120.4
2040	133.5	121.1	148.9	138.2
2045	150.5	136.7	170.2	158.9

1. All estimates are expressed in constant 2004-05 price terms.

**Table 21B – Policy variants: Projected balance of the Fund<sup>2</sup>**

Year ending 30 June	Policy variant			
	Central	P2	P4	P5
2005	63	63	63	63
2010	49	50	52	53
2015	42	44	53	56
2020	37	40	48	53
2025	34	38	41	49
2030	32	38	37	47
2035	31	39	36	48
2040	30	40	36	52
2045	29	43	37	58

2. Expressed as a multiple of outgo on contributory and industrial injury pensions.

- 9.21 If pension age were increased from 60 to 65 over the period 2008 to 2018, then the results for variant P4 (in Tables 21A and 21B) indicate that the financial position of the Fund would improve significantly relative to the central variant, C. This improvement arises because pensions would be payable for a shorter period, although this would be partly offset by the late retirement factor applying to pensions accrued before July 2008.
- 9.22 The results for variant P5 (in Tables 21A and 21B) indicate that, notwithstanding the increase in pension age, the financial position of the Fund would worsen because benefits would increase in line with earnings rather than prices between ages 60 and 65.
- 9.23 Table 22 sets out the valuation balance sheet and the required contribution rate for new contributors for policy variants P4 and P5, together with those for the central projection and variant P2, assuming that the contribution rate of 9% and the 'cost to value' ratio of a pension point of 11:1 were retained.

**Table 22 – Policy variants: Valuation balance sheet as at 30 June 2005**

(Rs billion)

Present value of	Central	P2	P4	P5
Accrued benefits	33	28	33	28
Future service benefits	25	16	20	11
<b>Total liabilities</b>	<b>58</b>	<b>44</b>	<b>53</b>	<b>39</b>
Current investments	38	38	38	38
Future contributions (at 9%)	25	19	25	19
<b>Total assets</b>	<b>63</b>	<b>57</b>	<b>63</b>	<b>57</b>
<b>Surplus (deficit)</b>	<b>5</b>	<b>13</b>	<b>10</b>	<b>18</b>
Required contribution rate for future contributors to the Scheme	9%	6½%	7½%	5%

- 9.24 If pension age were to be increased to age 65 (variants P4 and P5), then the Fund's surplus would increase significantly (as shown in Table 22), and further surplus would build up in the future in respect of new contributors (because the contribution rate of 9% is higher than the rate required for future contributors).
- 9.25 Alternatively, under variant P4, the contribution rate could be reduced by about 1½% (to about 7½%) from the corresponding projection with pension age 60 (projection C), in conjunction with a change in the 'cost to value' ratio of a pension point to 9:1. Similarly, under variant P5, the contribution rate could be reduced by about 1½% (to about 5%) from the corresponding projection with pension age 60 (projection P2), in conjunction with a change in the 'cost to value' ratio of a pension point to 6:1.

### **Summary**

- 9.26 The results shown in this section indicate that the policies adopted for the NPF could have a significant impact on the future financial position of the Fund. However, any change in policy would affect either the target pension at retirement which members would be likely to accrue (variants P2 and P3), or the value of the pension which comes into payment (the pension coming into payment under P1 would be more valuable as future pension increases would be in line with earnings rather than price inflation; the pension coming into payment under P4 would be less valuable as it would be paid for less time), or both (in the case of P5).
- 9.27 When considering whether or not to implement policy changes, the government will wish to bear in mind these effects along with the implications for the Fund's future financial position.

## 10 Financial variant projections

- 10.1 Section 8 describes the results of the central projection of the contributory scheme, based on the principal assumptions summarised in paragraph 8.4. However, the results of Section 8 should be viewed bearing in mind that the projected amounts of contribution income, benefit expenditure and investment income are all subject to uncertainty.
- 10.2 The main financial assumptions underlying the projections of the contributory scheme are in respect of real earnings growth and the real rate of investment return. In the central projection, it is assumed that real earnings growth will be 2% a year above prices and that the real rate of investment return will be 4% a year (in excess of prices).
- 10.3 Table 23 summarises the alternative assumptions adopted for the financial variant projections.

**Table 23 – Assumptions for financial variants**

Assumption	Central C	Variant F1	Variant F2	Variant F3	Variant F4
Real earnings growth (over prices)	2%	1%	3%	2%	2%
Real rate of investment return (over prices)	4%	3%	5%	3%	5%
Increase in contributory pensions in payment	Prices	Prices	Prices	Prices	Prices
Increase in cost and value of pension points	Earnings	Earnings	Earnings	Earnings	Earnings
Increase in earnings floor and ceiling	Earnings	Earnings	Earnings	Earnings	Earnings
Ratio of cost to value of pension points	11:1	11:1	11:1	11:1	11:1
Standard rate of contribution	9%	9%	9%	9%	9%

- 10.4 The detailed results of the financial variant projections are shown in Appendix G.
- 10.5 Table 24A summarises the projected trend of the Fund balance for these three variants. Table 24B summarises the projected trend of the Fund balance, expressed as a multiple of outgo on contributory and industrial injury pensions in the corresponding year.

**Table 24A – Financial variants: Projected balance of the Fund<sup>1</sup>**

(Rs billion)

Year ending 30 June	Financial variant				
	Central	F1	F2	F3	F4
2005	38.2	38.2	38.2	38.2	38.2
2010	49.4	47.0	52.0	47.1	51.8
2015	61.7	55.4	68.5	56.1	67.8
2020	74.7	63.4	87.9	64.6	86.3
2025	88.4	70.3	110.5	72.4	107.6
2030	102.5	76.1	136.7	78.9	132.3
2035	117.5	81.0	167.7	84.4	161.8
2040	133.5	84.9	204.4	88.3	197.0
2045	150.5	87.7	248.1	90.6	239.6

1. All estimates are expressed in constant 2004-05 price terms.

**Table 24B – Financial variants: Projected balance of the Fund<sup>2</sup>**

Year ending 30 June	Financial variant				
	Central	F1	F2	F3	F4
2005	63	63	63	63	63
2010	49	47	51	47	52
2015	42	39	45	38	46
2020	37	34	41	32	43
2025	34	30	38	28	41
2030	32	27	37	24	41
2035	31	25	37	22	42
2040	30	23	36	20	44
2045	29	22	37	18	46

2. Expressed as a multiple of outgo on contributory and industrial injury pensions.

- 10.6 Tables 24A and 24B show that the trend of the Fund balance over the next 40 years is sensitive to both the assumed rate of real earnings growth and the assumed real rate of investment return.
- 10.7 Table 24A shows that, for variants F1 and F3, in which the financial assumptions are more cautious than the central projection, the projected Fund balance increases at a slower rate than in the central projection. The converse applies for variants F2 and F4 (which represent more optimistic assumptions).

- 10.8 Table 25 sets out the valuation balance sheet and the required contribution rate for new entrants for each of the financial variants, together with those for the central projection. For each of the financial variants, the valuation balance sheet incorporates the existing investments of the Scheme at market value. This is equivalent to assuming that, under each variant, the existing assets will generate a future real rate of return in line with the assumed real rate of return for that variant.

**Table 25 – Financial variants: Valuation balance sheet as at 30 June 2005**

(Rs billion)

<b>Present value of</b>	<b>Central</b>	<b>F1</b>	<b>F2</b>	<b>F3</b>	<b>F4</b>
Accrued benefits	33	37	30	40	27
Future service benefits	25	27	23	35	18
<b>Total liabilities</b>	<b>58</b>	<b>64</b>	<b>53</b>	<b>75</b>	<b>45</b>
Current investments	38	38	38	38	38
Future contributions (at 9%)	25	25	25	28	22
<b>Total assets</b>	<b>63</b>	<b>63</b>	<b>63</b>	<b>66</b>	<b>60</b>
<b>Surplus (deficit)</b>	<b>5</b>	<b>(1)</b>	<b>10</b>	<b>(9)</b>	<b>15</b>
Required contribution rate for future contributors to the Scheme	9%	10%	8½%	12%	7%

- 10.9 In Table 25, the difference between the results of projections F3 and F4 (and between F1 and F2, to a lesser extent) indicates that it is particularly important to be aware of the potential effect of investing in assets that might not maximise the rate of return.
- 10.10 Table 25 indicates that the adequacy of the contribution rate is sensitive to relatively small variations in the real rate of return. Under the central assumptions (policy and financial), the current contribution rate of 9% is adequate to support the benefits (and administration costs) arising from the contributions, in respect of new contributors to the Scheme. The higher the assumed real rate of return, the lower is the contribution rate required to support the same level of contributory pensions for new contributors, and vice versa.

## **11 Conclusions and options for change**

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### **Conclusions**

- 11.1 The main purpose of this review is to assess the likely future progress of the Fund under the current provisions governing benefits and contributions. The results of Section 8 indicate that the current contribution rate of 9% is sufficient to support the current level of benefits under the central financial assumptions. This suggests that, if the central assumptions underlying the review were to be borne out in practice, then, over the longer term, the Fund's current assets together with future contribution income would be sufficient to meet the future benefit expenditure.
- 11.2 This would suggest that there is no immediate need to take action to improve the financial position of the Fund. Consequently, the report includes no specific recommendation regarding the future contribution rate (or other Scheme provisions). It should, however, be borne in mind that variations between the assumptions and future experience (particularly investment returns and increases to the price and value of pension units) might affect the Fund's financial position.

### **Options for change**

- 11.3 Despite the healthy position of the NPF at present, it is still appropriate to consider amendments to the Scheme which could alter its financial position in the longer term. This section considers the wider implications of some possible amendments to the Scheme.
- 11.4 The timing of any amendments should depend on the nature and extent of the changes since they will affect members of the Scheme in different ways. There will also be different implications for the future progress of the Fund. It is desirable that any changes should be implemented so as to allow affected members sufficient opportunity to reassess future expectations and to adjust to the changes in pension provision, particularly those closest to retirement.

### **Increase contribution income**

- 11.5 Contribution income could be increased by either raising the contribution rate or by changing the earnings floor and ceiling for contribution purposes. This would increase contribution income with virtually no immediate effect on pension costs, thus increasing the new money available for investment in the short term. However, if pension points continue to be earned based on the present relationship between the cost of a pension point and its value, then the increase in income over the short term would lead to higher pensions in the longer term (in effect, the target pension would be higher). Thus, although improving the position in the short term, there would be no significant impact on the surplus or deficit in the Fund over the long term.
- 11.6 However, if the contribution rate of 9% were to be increased without changing the target pension (by making a corresponding increase to the 'cost to value' ratio of a pension point), then contribution income would be greater without any increase in long-term pension costs. An example of such an option is considered in Section 9 (variant P3).

### **Change the target pension**

- 11.7 If the current contribution rate of 9% were to be retained but the cost of a pension point (relative to its value) were increased, then the target pension would be reduced. Consequently, long-term costs would be lower, with no change to contribution income, improving the long-term position of the Fund.
- 11.8 Alternatively, the target pension would be reduced if, in future, the cost and value of a pension point were to be increased in line with prices rather than earnings. This option is considered in Section 9 (variant P2). Conversely, given the current funding position on the central assumptions, the cost and value of a pension point could be increased at a rate in excess of earnings for a small number of years, to compensate for the fact that the cost and value of pension points has only been increased in line with price inflation for some periods in the past. This would increase long-term costs, and consequently worsen the long-term position of the Fund relative to the central projection.

### **Increase Pension age**

- 11.9 We understand that the minimum pension age is to be gradually increased from age 60 to 65 over the ten years beginning in July 2008. This will reduce pension expenditure in the long term. The effects of this change are considered, in Section 9 (variants P4 and P5).
- 11.10 We advised the ministry separately on various options and considerations for increasing the minimum pension age, including the following points:
- (i) whether benefits already accrued before the implementation of the change in pension age should be affected by the change;
  - (ii) whether the implementation period should be delayed to allow members time to make alternative retirement plans based on their new situation; and
  - (iii) whether there should be a different implementation period for sugar workers.
- 11.11 There is also an option to retire early with an actuarially reduced pension. Consideration should be given to how such early retirement factors are calculated. We would be happy to give further advice on this matter.

### **Adjust increases to pensions in payment**

- 11.12 The central projection of this review assumes that contributory pensions in payment will increase in line with prices. Over the longer-term, there may be pressure to increase pensions at a higher rate than prices (as has been the case for basic pensions in the past), for example, earnings increases. On the central assumption that earnings increases will exceed price increases by 2% a year, a pension in payment will fall by about one-third relative to average earnings between retirement at 60 and age 80. The option of increasing contributory pensions in payment in line with general earnings increases is considered in Section 9 (variant P1).

### **Guaranteed minimum contributory pension**

- 11.13 In the early years of the Scheme, the guaranteed minimum contributory pension enabled those who were close to retirement in 1978, and so able to accumulate only a relatively small number of pension points, to receive a reasonable level of contributory pension. However, now that the Scheme has been in existence for over twenty years, the guaranteed minimum is unlikely to serve this purpose for most retiring members. Under certain circumstances, it may still be desirable to provide a guaranteed minimum (for example, if habitually low earnings or regular periods of unemployment prevail). However, the guarantee presents a significant incentive for people to contribute to the NPF for only a short time.
- 11.14 In order to prevent any potential abuse of the Scheme, it may be desirable to pay the guaranteed minimum subject to satisfying certain contribution conditions. For example, the guarantee could only apply if contributions have been paid for at least a minimum period or in a specified number of years, or provided that a specified minimum number of pension points have been accrued. The conditions selected might depend partly on the form in which contribution records are maintained, and partly on whom the minimum pension is, in future, intended to protect.

### **Voluntary Retirement Scheme**

- 11.15 The introduction of the VRS in the sugar industry allows certain employees, on leaving the sugar industry, to take early payment of an actuarially reduced contributory retirement pension. The main effect of the VRS is to bring forward the payment of contributory benefits that would otherwise have been payable from a later date. The impact to date of the VRS is discussed in Section 8.
- 11.16 The projections in this report have been prepared on the assumption that the VRS will continue to be available indefinitely to workers in the sugar industry. Based on the profile of members assumed to retire under the VRS, if the projections were instead to assume that the VRS would not continue to be available in the longer term, then this would improve the projected long-term position of the Scheme very slightly (for the reasons discussed in paragraphs 8.28 to 8.36).


### **Future actuarial review**

- 11.17 The next actuarial review of the NPF is due as at 30 June 2010. However, if significant amendments to the Scheme were to be proposed, then it is recommended that a report be prepared to illustrate the financial effects of the changes.

## **12 Acknowledgements**

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- 12.1 I should like to thank the officials of all the Government Departments (particularly those at the Ministry of Social Security) and SICOM, who provided assistance to me in connection with this report. I should especially like to thank Mrs K Bhoojedhur-Obeegadoo, the Actuarial Adviser to the National Pensions Fund, and her colleague, Mr Vijay Balgobin (both of SICOM), who were responsible for the estimates relating to basic pensions and who provided valuable assistance in the preparation of this report.



**E I Battersby**  
**Fellow of the Institute of Actuaries**  
**28 November 2008**

## **Appendix A – Summary of the Scheme's provisions**

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1. The Scheme was phased in between July 1978 and July 1980. The central projection has been prepared based on the following benefits:
  - (i) Basic pensions - cost met by Government Grant,
  - (ii) Contributory pensions - cost funded by employers and employees, and
  - (iii) Industrial injury pensions - cost funded by employers and employees.

2. Basic pensions are universal. Details of basic pensions are included in Appendix E.

3. The contributory scheme is compulsory for employees other than public servants (who are ineligible for both contributory and industrial injury pensions). The Scheme has been voluntary for the self-employed since July 1980.

### **Contributions**

4. Contributions are related to the level of earnings. There are upper and lower limits of earnings for contribution liability. Contributions are not payable in respect of employees with earnings below the earnings floor (Rs 1,095 a month from July 2004). For employees with higher earnings, contributions are payable on all earnings up to the earnings ceiling (Rs 7,205 a month from July 2004).

5. The standard rate of contribution is 9% of earnings, of which 3% is by the employee and 6% by the employer. Contributions in respect of most employees in the sugar industry are at the higher rate of 13½% of earnings, of which 3% is by the employee and 10½% by the employer. Subject to the approval of the Minister and certain conditions, other employers and employees may pay contributions at a higher rate of 13½% (5% by the employee and 8½% by the employer).

### **Contributory pensions**

6. The amount of a contributory pension depends on the number of pension points purchased before retirement which is determined (annually) by dividing (i) the amount of contributions paid in respect of a member, by (ii) the 'cost' of a pension point.

7. Pension points earned each year are added to those purchased in earlier years. At retirement, the amount of a contributory pension is calculated by multiplying the accumulated number of pension points by the current 'value' of a point. Since 1988-89, the ratio of the 'cost' of a pension point to its 'value' one year later has been 11:1. Both the cost and the value of pension points are reviewed annually. For most of the period from 1978 up to 2000, annual revaluations have been in line with increases in the CPI. From 2001 onwards, the cost and the value of pension points have increased broadly in line with earnings increases.

### **Contributory retirement pension**

8. Contributory retirement pension is payable from age 60, although it may be deferred until after age 60. For members unable to pay contributions for 40 years due to their age at the commencement of the Scheme in 1978, the level of pension payable is enhanced. For those aged 40 or over in 1978, pension points are doubled. For those aged between 20 and 40 in 1978, pension points are adjusted as if they had accrued at their average annual rate for 40 years.

9. With a contribution rate of 9% and the ratio of the cost to the value of a pension point (one year later) of 11:1, the annual contributory retirement pension is broadly equivalent to  $1/120^{\text{th}}$  ( $1/80^{\text{th}}$  for higher rate contributors) of total career earnings, revalued to the year before retirement. For an employee with 40 years' service, this produces an annual pension of about one third (one half for higher rate contributors) of average annual earnings, revalued to the year before retirement. The rate at which career earnings are revalued depends on the increases applied to the value of pension points between the date of purchase and retirement.
10. A guaranteed minimum level of contributory retirement pension is payable (Rs 348 per month in the year ending June 2005): the Government meets the cost of this guaranteed minimum over the amount which would otherwise have been payable.

#### **Contributory widow's pension**

11. Contributory widow's pension is payable to widows of all ages, the amount depending on the number of pension points accrued by the husband. In cases where the husband was able to pay contributions for only a few years before death, the accrued pension points are enhanced as if they had accrued at the average annual rate for 20 years (or until age 60 if this is less).
12. For a widow under age 60 with dependent children, or where widowhood occurred within the past year, the level of contributory widow's pension is based on the full amount of contributory retirement pension that her husband was receiving (or would have been entitled to receive) at the time of his death. In other cases where a widow is below age 60, the pension is payable at two-thirds of this amount. For a widow over age 60, the level of contributory widow's pension is based on the full amount of contributory retirement pension that her husband was receiving (or would have been entitled to receive) at the time of his death.

#### **Contributory invalidity pension**

13. The amount of invalidity pension is determined using the same enhancement of the member's contribution record as for contributory widow's pension. Benefit is paid at two-thirds of the normal rate where there are no dependent children.

#### **Contributory orphan's pension**

14. The amount of pension payable is 15% of the contributory pension that was or would have been in payment to either parent (whichever is higher).

#### **Refund of contributions**

15. On death before age 60 of all insured females and unmarried insured males, a lump sum is payable consisting of contributions paid by the insured person together with accrued interest, provided that no contributory pension is payable.

#### **Increases to contributory pensions in payment**

16. Increases to contributory pensions after they come into payment are at the Minister's discretion. In the past, increases have been broadly in line with the CPI.

### Contributory pensions data

17. Table A1 sets out, for the past 10 years, the main information relating to contributions and contributory pensions.

**Table A1 – Contributory pensions data**

Year ending 30 June	Monthly earnings		Pension points		Maximum points in year <sup>2</sup>	Minimum monthly CRP Rs
	Minimum	Ceiling	Cost	Value <sup>1</sup>		
	Rs	Rs	Rs	Rs		
1996	612	4,625	40.48	3.69	123	167
1997	612	4,625	43.72	3.99	114	177
1998	699	5,100	46.54	4.23	119	191
1999	699	5,100	50.10	4.55	110	202
2000	800	5,535	52.86	4.80	113	218
2001	800	5,535	57.44	5.22	104	
2002	908	6,000	61.59	5.60	105	
2003	975	6,435	64.71	5.88	107	
2004	1,025	6,765	68.89	6.26	106	
2005	1,095	7,205	76.37	6.94	102	348

1. Annual pension payable in respect of 1 pension point for retirements from 1 November following year ending 30 June.
2. For standard contributors with 9% contribution rate.

### Industrial injury pensions

18. Industrial injury benefits may be payable where an employee who is a member of the Scheme suffers from an accident or a prescribed disease resulting from his employment. Industrial injury allowance is paid during any time of temporary total incapacity for work except for the first two weeks when the employer must pay normal earnings; the level of monthly benefit is equal to 80% of the employee's monthly earnings averaged over the 12 months before the injury occurs. Disablement pension is payable in respect of any period that an employee has been, or expects to be, disabled; the amount is a percentage of earnings based on the level of disablement.

### Sugar Industry Pension Fund lump sums

19. Special arrangements exist for certain sugar industry employees whereby the Sugar Industry Pension Fund transferred to the National Pensions Fund lump sums based on the contributions previously paid to the Sugar Industry Pension Fund. Appropriate lump sums are payable with interest from the NPF to the employees concerned upon their reaching age 60 or on prior death or ill health.

## Appendix B – Summary of revenue accounts

**Table B1 – Summary of revenue accounts of the National Pensions Fund**

	(Rs million)					
	2000-01	2001-02	2002-03	2003-04	2004-05	2000-05
Fund balance at start of year	18,891	21,760	24,963	28,417	32,036 <sup>1</sup>	18,891
Prior year adjustment	5	4	-5	0	0	4
<b>Revised Fund balance</b>	<b>18,896</b>	<b>21,764</b>	<b>24,958</b>	<b>28,417</b>	<b>32,036<sup>1</sup></b>	
<b>Income</b>						
Government Grant <sup>2</sup>	3,601	3,872	4,281	4,618	5,050	21,421
Contribution income	1,055	1,213	1,202	1,257	1,367	6,095
Investment income <sup>3</sup>	2,130	2,395	2,843	2,895	2,678	12,941
Other income	156	78	53	128	204	619
<b>Total income<sup>4</sup></b>	<b>6,941</b>	<b>7,558</b>	<b>8,379</b>	<b>8,898</b>	<b>9,299</b>	<b>41,076</b>
<b>Expenditure</b>						
Basic pensions	3,598	3,865	4,275	4,608	5,014	21,360
Contributory pensions <sup>4</sup>	277	332	416	488	572	2,085
Industrial injury pensions	21	24	26	26	27	125
Lump sum payments <sup>5</sup>	14	20	74	13	11	133
Administration	77	86	101	105	111	480
Other expenditure	90	31	29	39	28	216
<b>Total expenditure</b>	<b>4,077</b>	<b>4,359</b>	<b>4,920</b>	<b>5,279</b>	<b>5,763</b>	<b>24,399</b>
Excess of income over expenditure	2,864	3,199	3,459	3,619	3,536	16,677
Investment revaluation reserve	0	0	0	0	2,583	2,583
Non current liabilities	0	0	0	0	1	1
<b>Fund balance at end of year</b>	<b>21,760</b>	<b>24,963</b>	<b>28,417</b>	<b>32,036</b>	<b>38,156</b>	<b>38,156</b>

1. Excludes investment revaluation reserve.
2. Basic pensions plus cost of guaranteed minimum contributory pension and inmate's allowance.
3. Includes income from the NPF building. Excludes some unrealised gains on assets and currency gains/losses.
4. Includes expenditure on the guaranteed minimum contributory pension.
5. Includes lump sum payment to former members of the SIPP.

## Appendix C – Population projections

**Table C1 – Population projection 2005- 20245**  
**Republic of Mauritius, 2004-based, medium variant**

									thousands
Age group	2005	2010	2015	2020	2025	2030	2035	2040	2045 <sup>1</sup>
<b>Males</b>									
0-14	155	149	147	145	143	141	138	138	136
15-29	155	154	152	152	147	146	145	143	141
30-44	146	148	148	150	150	149	150	145	144
45-59	108	126	134	134	136	138	140	142	140
60-74	39	49	65	83	99	106	107	111	116
75+	12	13	15	17	23	31	40	46	50
<b>All males</b>	<b>615</b>	<b>639</b>	<b>661</b>	<b>681</b>	<b>698</b>	<b>711</b>	<b>720</b>	<b>725</b>	<b>727</b>
<b>Females</b>									
0-14	150	143	142	141	139	136	135	133	132
15-29	154	151	149	148	143	142	141	139	137
30-44	146	151	151	151	149	148	147	143	141
45-59	110	129	138	141	146	146	147	147	143
60-74	48	59	75	93	109	118	120	126	130
75+	20	22	25	28	35	45	55	63	69
<b>All females</b>	<b>628</b>	<b>655</b>	<b>680</b>	<b>702</b>	<b>721</b>	<b>735</b>	<b>745</b>	<b>751</b>	<b>752</b>
<b>Total</b>									
0-14	305	292	289	286	282	277	273	271	268
15-29	309	305	301	300	290	288	286	282	278
30-44	292	299	299	301	299	297	297	288	285
45-59	218	255	272	275	282	284	287	289	283
60-74	87	108	140	176	208	224	227	237	246
75+	32	35	40	45	58	76	95	109	119
<b>Total population</b>	<b>1,243</b>	<b>1,294</b>	<b>1,341</b>	<b>1,383</b>	<b>1,419</b>	<b>1,446</b>	<b>1,465</b>	<b>1,476</b>	<b>1,479</b>

1. 2045 figure estimated by GAD

Source: Central Statistics Office, Mauritius

## Appendix D – Data summary

### Number of contributors 2000-01 to 2004-05 and units accrued

Table D1 – Number of contributors in year: Males

Age group	2000-01	2001-02	2002-03	2003-04	2004-05
under 20	6,400	5,700	5,800	5,100	4,900
20-24	27,900	27,300	28,400	27,100	25,100
25-29	23,800	25,100	28,500	28,900	28,600
30-34	23,300	23,200	24,100	24,500	23,100
35-39	25,200	25,400	26,600	25,600	23,900
40-44	19,700	21,000	22,800	23,700	23,700
45-49	15,100	16,200	16,900	17,700	18,400
50-54	10,900	12,100	13,100	13,600	13,800
55-59	6,100	6,500	6,400	7,000	7,700
60 and over	2,500	2,500	2,900	3,100	3,100
<b>Total</b>	<b>160,900</b>	<b>165,000</b>	<b>175,500</b>	<b>176,300</b>	<b>172,300</b>

Table D2 – Number of units accrued in year: Males

Age group	2000-01	2001-02	2002-03	2003-04	2004-05
under 20	160,600	135,600	132,700	118,500	111,400
20-24	1,322,500	1,254,600	1,247,200	1,196,500	1,098,300
25-29	1,572,200	1,593,500	1,722,000	1,741,300	1,686,000
30-34	1,777,600	1,677,200	1,647,000	1,654,700	1,545,500
35-39	2,094,000	2,012,700	2,017,700	1,929,100	1,748,300
40-44	1,758,400	1,775,700	1,866,000	1,925,000	1,844,900
45-49	1,464,900	1,477,400	1,491,300	1,551,900	1,529,900
50-54	1,109,800	1,145,700	1,192,100	1,247,700	1,208,600
55-59	594,900	562,200	505,000	585,100	649,800
60 and over	118,000	110,800	98,300	113,300	109,500
<b>Total</b>	<b>11,972,900</b>	<b>11,745,400</b>	<b>11,919,300</b>	<b>12,063,100</b>	<b>11,532,200</b>

**Table D3 – Number of contributors in year: Females**

<b>Age group</b>	<b>2000-01</b>	<b>2001-02</b>	<b>2002-03</b>	<b>2003-04</b>	<b>2004-05</b>
Under 20	4,400	3,600	3,400	3,300	3,500
20-24	19,200	18,800	19,300	18,200	17,500
25-29	15,000	15,500	17,200	17,800	18,200
30-34	14,400	14,200	14,200	14,500	14,300
35-39	16,500	16,000	17,000	16,300	15,500
40-44	14,000	14,500	15,100	15,300	14,900
45-49	11,100	11,600	12,000	12,200	11,900
50-54	7,900	8,400	8,200	8,400	8,300
55-59	4,200	4,500	4,000	4,200	4,300
60 and over	1,300	1,400	1,400	1,500	1,500
<b>Total</b>	<b>108,000</b>	<b>108,500</b>	<b>111,800</b>	<b>111,700</b>	<b>109,900</b>

**Table D4 – Number of units accrued in year: Females**

<b>Age group</b>	<b>2000-01</b>	<b>2001-02</b>	<b>2002-03</b>	<b>2003-04</b>	<b>2004-05</b>
Under 20	97,900	75,400	71,800	68,400	72,800
20-24	797,300	776,000	772,000	747,900	735,800
25-29	802,500	817,300	895,100	940,100	951,400
30-34	769,200	743,200	736,900	757,600	733,800
35-39	851,900	816,800	858,100	833,100	767,100
40-44	759,100	753,800	767,500	775,000	744,100
45-49	643,500	639,200	650,500	660,800	624,600
50-54	497,300	446,900	402,600	432,600	428,400
55-59	272,300	242,400	182,200	197,100	197,500
60 and over	42,900	41,400	31,300	36,400	37,000
<b>Total</b>	<b>5,533,900</b>	<b>5,352,400</b>	<b>5,368,000</b>	<b>5,449,000</b>	<b>5,292,500</b>

**Table D5: Summary of accrued units as at 30 June 2005** <sup>1,2,3</sup>

Age group	Estimated total units as at 30 June 2005	
	Males	Females
Under 20	149,000	93,000
20-24	3,832,000	2,430,000
25-29	11,790,000	6,964,000
30-34	18,709,000	9,647,000
35-39	29,716,000	13,437,000
40-44	39,401,000	16,111,000
45-49	39,912,000	16,352,000
50-54	36,930,000	13,947,000
55-59	27,118,000	9,742,000
<b>Total</b>	<b>207,557,000</b>	<b>88,723,000</b>

1. Data on total accumulated pension points was not provided for this review. The above amounts have been estimated based on data on accumulated pension points from the 2000 review, together with data on units accrued from 2001 to 2005.
2. After comparing the aggregate data shown above with the accounts, the actual amounts taken into account in the review were about 6% higher than this.
3. In addition, there are a small number of contributors aged 60 and over. The data for these members could not be separated from that relating to contributory pensioners but allowances have been made for this in the estimates.

**Table D6 – Contributory pensions in payment 2004-05**

		Numbers <sup>1</sup>	Amount Rs million
<b>Retirement pension</b>	Males	22,000	321
	Females	21,600	139
<b>Total</b>		<b>43,600</b>	<b>460</b>
<b>Widows pension</b>	Under 60	8,100	43
	60 and above	5,900	46
<b>Total</b>		<b>14,000</b>	<b>89</b>
<b>Orphans</b>		100	0
<b>Invalidity pension</b>	Males	3,200	18
	Females	2,400	5
<b>Total</b>		<b>5,600</b>	<b>23</b>
<b>Overall total</b>		<b>63,300</b>	<b>572</b>

1. Numbers as at 30 June 2005.

## Appendix E – Estimating methods for basic pensions

1. Basic pensions are flat rate with the following monthly benefit rates from July 2004 to June 2005.

Table E1 – Rates of basic pension per month 2004-2005

Benefit		Per month, Rs
Retirement pension	age 60-69	1,900
	age 70-89	2,000
	age 90-99	6,850
	age 100 & over	7,795
Retirement pension (invalids)	age 60-69	3,230
	age 70-89	3,330
	age 90-99	8,180
	age 100 & over	9,125
Widow's pension		1,900
Invalid's pension		1,900
Orphan's pension		1,050
Guardian's allowance		465
Child's allowance	under age 10	615
	age 10 & over	660
Inmate's allowance		325

2. Increases in the basic pension benefit rates are at the Government's discretion. It has been recent practice to pay pensioners an end of year bonus of one month's pension; this has been assumed to continue in the basic pension estimates.

### Retirement pension

3. This is payable to everyone over the age of 60 who satisfies certain residency qualifications. As at June 2005, there were some 121,000 pensioners. The projections assume that the number of basic retirement pensioners will remain a constant proportion of the projected population over the age of 60.

### Widow's pension

4. This is payable to widows under age 60 who satisfy certain residency qualifications. Upon reaching age 60, basic retirement pension becomes payable. Child allowance is payable for up to three dependent children. As at June 2005, there were some 23,000 pensioners with about 8,000 child allowances. For the future it has been assumed that the proportion of women in each 5-year age group of the population who are widows will remain constant. Allowance has been made for a future reduction in the proportion of widows attracting child allowance in view of the falling fertility rate.

### **Invalid's pension**

5. This is payable to those between the ages of 15 and 60 who have been certified by a medical board as being substantially disabled either permanently or for a period of at least 12 months. Child allowance is payable for up to three dependent children. As at June 2005, there were some 26,000 pensioners with about 10,000 child allowances. The projections assume that the proportion of men and women in each 5-year age group of the population who are invalidity pensioners will remain constant. Allowance has been made for a fall in the proportion of pensioners attracting child allowances in the future.

### **Orphan's pensions and Guardian's allowance**

6. Orphan's pensions are payable for orphans under the age of 15 (or under 20 if still in full-time education) and guardians allowance is payable to the person looking after the orphan. As at June 2005, there were some 500 orphans and about 400 guardians. The projections assume that the proportion of children in the population who are orphans, and the average number of orphans per guardian, will remain constant.

### **Inmate's allowance**

7. This nominal benefit is payable to those inmates of charitable institutions who would otherwise be eligible for retirement or invalidity pension. As at June 2005, there were about 800 such inmates in infirmaries and orphanages. The projections assume that the proportion of men and women in each age group of the population who are inmates will remain constant.

## **Appendix F – Policy variant projections**

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This Appendix contains details of the policy variant projections discussed in Section 10. For each variant, the Appendix includes the equivalent of Tables 13 and 14 for the central projection (shown in Section 8) as follows:

<b>Policy variant</b>	<b>Contributory pension expenditure</b>	<b>NPF balance</b>
P1	Table F13 (P1)	Table F14 (P1)
P2	Table F13 (P2)	Table F14 (P2)
P3	Table F13 (P3)	Table F14 (P3)

**Table F13 (P1) – Estimated expenditure on contributory pensions<sup>1</sup> : Policy variant P1**

(Rs million)

Year ending 30 June	2005	2010	2015	2020	2025	2030	2035	2040	2045
<b>Contributory pensions</b>									
Retirement pension <sup>2</sup>	460	776	1,154	1,592	2,128	2,675	3,180	3,819	4,416
Widow's pension <sup>3</sup>	89	202	355	553	782	1,034	1,296	1,557	1,814
Invalidity pension	23	31	39	48	56	65	78	85	93
Return of contributions	8	16	17	18	17	17	16	16	16
<b>Total contributory pensions</b>	<b>580</b>	<b>1,025</b>	<b>1,565</b>	<b>2,211</b>	<b>2,983</b>	<b>3,791</b>	<b>4,570</b>	<b>5,477</b>	<b>6,339</b>
Retirement pension minimum guarantee <sup>4</sup>	36	32	35	40	43	41	32	39	45

1. All estimates are expressed in constant 2004-05 price terms.
2. Contributory retirement pension includes the additional amounts to meet the guaranteed minimum level (see 4).
3. Contributory widow's pension includes pensions payable to widows under and over age 60. Also includes contributory orphan's pensions.
4. Included in retirement pension above. Cost met by Government Grant.

**Table F14 (P1) – Estimated income, expenditure and balance of the Fund<sup>1</sup> : Policy variant P1**

(Rs million)

Year ending 30 June	2005	2010	2015	2020	2025	2030	2035	2040	2045
<b>Income</b>									
Government Grant <sup>2</sup>	5,050	6,413	8,483	11,039	14,088	17,480	20,730	24,693	28,589
Contribution income	1,367	1,549	1,753	1,937	2,124	2,342	2,574	2,816	3,082
<b>Total income <sup>3</sup></b>	<b>6,417</b>	<b>7,962</b>	<b>10,236</b>	<b>12,976</b>	<b>16,212</b>	<b>19,822</b>	<b>23,304</b>	<b>27,509</b>	<b>31,671</b>
<b>Expenditure</b>									
Basic pensions	5,014	6,380	8,448	11,000	14,046	17,440	20,699	24,657	28,544
Contributory pensions	580	1,025	1,565	2,211	2,983	3,791	4,570	5,477	6,339
Industrial injury pensions	27	35	50	60	65	80	85	95	105
Lump sum payments <sup>4</sup>	3	2	1	0	0	0	0	0	0
Administration	111	147	177	207	237	265	287	312	330
<b>Total expenditure <sup>5</sup></b>	<b>5,735</b>	<b>7,589</b>	<b>10,241</b>	<b>13,478</b>	<b>17,331</b>	<b>21,576</b>	<b>25,641</b>	<b>30,541</b>	<b>35,318</b>
Excess of income over expenditure	682	373	-5	-502	-1,119	-1,754	-2,337	-3,032	-3,647
Investment income	2,678	1,906	2,363	2,826	3,270	3,674	4,033	4,331	4,548
<b>Fund balance at end of year</b>	<b>38,156</b>	<b>49,251</b>	<b>60,835</b>	<b>72,521</b>	<b>83,656</b>	<b>93,749</b>	<b>102,695</b>	<b>109,998</b>	<b>115,277</b>
Fund balance as multiple of outgo on contributory & industrial injury pensions	63	46	38	32	27	24	22	20	18

1. All estimates are expressed in constant 2004-05 price terms.
2. The Government Grant meets the cost of basic pensions and the cost of the guaranteed minimum level of contributory retirement pension.
3. Excludes other income in year ending 30 June 2005.
4. Lump sum payments to former members of the Sugar Industry Pension Fund.
5. Excludes other expenditure in year ending 30 June 2005.

**Table F13 (P2) – Estimated expenditure on contributory pensions<sup>1</sup> : Policy variant P2**

(Rs million)

<b>Year ending 30 June</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>
<b>Contributory pensions</b>									
Retirement pension <sup>2</sup>	460	718	980	1,234	1,502	1,716	1,853	2,017	2,114
Widow's pension <sup>3</sup>	89	182	292	414	534	645	736	805	853
Invalidity pension	23	31	38	46	54	61	72	78	84
Return of contributions	8	15	16	16	15	14	13	12	12
<b>Total contributory pensions</b>	<b>580</b>	<b>946</b>	<b>1,326</b>	<b>1,710</b>	<b>2,105</b>	<b>2,436</b>	<b>2,674</b>	<b>2,912</b>	<b>3,063</b>
Retirement pension minimum guarantee <sup>4</sup>	36	29	29	31	30	26	18	20	21

1. All estimates are expressed in constant 2004-05 price terms.
2. Contributory retirement pension includes the additional amounts to meet the guaranteed minimum level (see 4).
3. Contributory widow's pension includes pensions payable to widows under and over age 60. Also includes contributory orphan's pensions.
4. Included in retirement pension above. Cost met by Government Grant.

**Table F14 (P2) – Estimated income, expenditure and balance of the Fund<sup>1</sup> : Policy variant P2**

(Rs million)

<b>Year ending 30 June</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>
<b>Income</b>									
Government Grant <sup>2</sup>	5,050	5,807	6,961	8,202	9,479	10,654	11,444	12,349	12,947
Contribution income	1,367	1,415	1,451	1,453	1,443	1,441	1,435	1,422	1,409
<b>Total income <sup>3</sup></b>	<b>6,417</b>	<b>7,222</b>	<b>8,412</b>	<b>9,655</b>	<b>10,922</b>	<b>12,095</b>	<b>12,879</b>	<b>13,771</b>	<b>14,356</b>
<b>Expenditure</b>									
Basic pensions	5,014	5,777	6,931	8,172	9,449	10,628	11,426	12,330	12,925
Contributory pensions	580	946	1,326	1,710	2,105	2,436	2,674	2,912	3,063
Industrial injury pensions	27	35	50	60	65	80	85	95	105
Lump sum payments <sup>4</sup>	3	2	1	0	0	0	0	0	0
Administration	111	147	177	207	237	265	287	312	330
<b>Total expenditure <sup>5</sup></b>	<b>5,735</b>	<b>6,907</b>	<b>8,485</b>	<b>10,149</b>	<b>11,856</b>	<b>13,409</b>	<b>14,472</b>	<b>15,649</b>	<b>16,423</b>
Excess of income over expenditure	682	315	-73	-494	-934	-1,314	-1,593	-1,878	-2,067
Investment income	2,678	1,899	2,340	2,790	3,245	3,709	4,202	4,741	5,347
<b>Fund balance at end of year</b>	<b>38,156</b>	<b>49,061</b>	<b>60,220</b>	<b>71,600</b>	<b>83,093</b>	<b>94,844</b>	<b>107,397</b>	<b>121,143</b>	<b>136,653</b>
Fund balance as multiple of outgo on contributory & industrial injury pensions	63	50	44	40	38	38	39	40	43

1. All estimates are expressed in constant 2004-05 price terms.
2. The Government Grant meets the cost of basic pensions and the cost of the guaranteed minimum level of contributory retirement pension.
3. Excludes other income in year ending 30 June 2005.
4. Lump sum payments to former members of the Sugar Industry Pension Fund.
5. Excludes other expenditure in year ending 30 June 2005.

**Table F13 (P3) – Estimated expenditure on contributory pensions<sup>1</sup> : Policy variant P3**

(Rs million)

Year ending 30 June	2005	2010	2015	2020	2025	2030	2035	2040	2045
<b>Contributory pensions</b>									
Retirement pension <sup>2</sup>	460	735	1,059	1,428	1,882	2,336	2,742	3,284	3,783
Widow's pension <sup>3</sup>	89	185	305	448	603	764	925	1,082	1,238
Invalidity pension	23	31	38	46	54	61	72	78	84
Return of contributions	8	16	17	18	17	17	17	16	17
<b>Total contributory pensions</b>	<b>580</b>	<b>967</b>	<b>1,419</b>	<b>1,940</b>	<b>2,556</b>	<b>3,178</b>	<b>3,756</b>	<b>4,460</b>	<b>5,122</b>
Retirement pension minimum guarantee <sup>4</sup>	36	30	32	36	38	36	27	33	38

1. All estimates are expressed in constant 2004-05 price terms.
2. Contributory retirement pension includes the additional amounts to meet the guaranteed minimum level (see 4).
3. Contributory widow's pension includes pensions payable to widows under and over age 60. Also includes contributory orphan's pensions.
4. Included in retirement pension above. Cost met by Government Grant.

**Table F14 (P3) – Estimated income, expenditure and balance of the Fund<sup>1</sup> : Policy variant P3**

(Rs million)

<b>Year ending 30 June</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>
<b>Income</b>									
Government Grant <sup>2</sup>	5,050	5,808	6,963	8,207	9,487	10,663	11,453	12,362	12,964
Contribution income	1,367	1,721	1,947	2,152	2,360	2,602	2,860	3,129	3,424
<b>Total income <sup>3</sup></b>	<b>6,417</b>	<b>7,529</b>	<b>8,910</b>	<b>10,359</b>	<b>11,847</b>	<b>13,265</b>	<b>14,313</b>	<b>15,491</b>	<b>16,388</b>
<b>Expenditure</b>									
Basic pensions	5,014	5,777	6,931	8,172	9,449	10,628	11,426	12,330	12,925
Contributory pensions	580	967	1,419	1,940	2,556	3,178	3,756	4,460	5,122
Industrial injury pensions	27	35	50	60	65	80	85	95	105
Lump sum payments <sup>4</sup>	3	2	1	0	0	0	0	0	0
Administration	111	147	177	207	237	265	287	312	330
<b>Total expenditure <sup>5</sup></b>	<b>5,735</b>	<b>6,928</b>	<b>8,578</b>	<b>10,379</b>	<b>12,307</b>	<b>14,151</b>	<b>15,554</b>	<b>17,197</b>	<b>18,482</b>
Excess of income over expenditure	682	601	332	-20	-460	-886	-1,241	-1,706	-2,094
Investment income	2,678	1,930	2,455	3,028	3,642	4,294	5,003	5,778	6,630
<b>Fund balance at end of year</b>	<b>38,156</b>	<b>50,008</b>	<b>63,389</b>	<b>77,979</b>	<b>93,548</b>	<b>110,127</b>	<b>128,216</b>	<b>147,955</b>	<b>169,698</b>
Fund balance as multiple of outgo on contributory & industrial injury pensions	63	50	43	39	36	34	33	32	32

1. All estimates are expressed in constant 2004-05 price terms.
2. The Government Grant meets the cost of basic pensions and the cost of the guaranteed minimum level of contributory retirement pension.
3. Excludes other income in year ending 30 June 2005.
4. Lump sum payments to former members of the Sugar Industry Pension Fund.
5. Excludes other expenditure in year ending 30 June 2005.

## **Appendix G – Financial variant projections**

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This Appendix contains details of the financial variant projections discussed in Section 9. For each variant, the Appendix includes the equivalent of Tables 13 and 14 for the central projection (shown in Section 8) as follows:

<b>Financial variant</b>	<b>Contributory pension expenditure</b>	<b>NPF balance</b>
F1	Table G13 (F1)	Table G14 (F1)
F2	Table G13 (F2)	Table G14 (F2)
F3	Table G13 (F3)	Table G14 (F3)
F4	Table G13 (F4)	Table G14 (F4)

**Table G13 (F1) – Estimated expenditure on contributory pensions<sup>1</sup> : Financial variant F1**

(Rs million)

<b>Year ending 30 June</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>
<b>Contributory pensions</b>									
Retirement pension <sup>2</sup>	460	726	1,018	1,325	1,675	1,993	2,240	2,554	2,804
Widow's pension <sup>3</sup>	89	183	298	430	566	699	820	927	1,019
Invalidity pension	23	30	36	43	49	54	62	65	69
Return of contributions	8	15	16	17	16	15	14	14	14
<b>Total contributory pensions</b>	<b>580</b>	<b>954</b>	<b>1,368</b>	<b>1,815</b>	<b>2,306</b>	<b>2,761</b>	<b>3,136</b>	<b>3,560</b>	<b>3,906</b>
Retirement pension minimum guarantee <sup>4</sup>	36	29	30	33	33	30	22	26	28

1. All estimates are expressed in constant 2004-05 price terms.
2. Contributory retirement pension includes the additional amounts to meet the guaranteed minimum level (see 4).
3. Contributory widow's pension includes pensions payable to widows under and over age 60. Also includes contributory orphan's pensions.
4. Included in retirement pension above. Cost met by Government Grant.

**Table G14 (F1) – Estimated income, expenditure and balance of the Fund<sup>1</sup> : Financial variant F1**

(Rs million)

Year ending 30 June	2005	2010	2015	2020	2025	2030	2035	2040	2045
<b>Income</b>									
Government Grant <sup>2</sup>	5,050	5,807	6,962	8,205	9,482	10,658	11,448	12,355	12,954
Contribution income	1,367	1,481	1,595	1,679	1,752	1,839	1,924	2,004	2,088
<b>Total income <sup>3</sup></b>	<b>6,417</b>	<b>7,288</b>	<b>8,557</b>	<b>9,884</b>	<b>11,234</b>	<b>12,497</b>	<b>13,372</b>	<b>14,359</b>	<b>15,042</b>
<b>Expenditure</b>									
Basic pensions	5,014	5,777	6,931	8,172	9,449	10,628	11,426	12,330	12,925
Contributory pensions	580	954	1,368	1,815	2,306	2,761	3,136	3,560	3,906
Industrial injury pensions	27	35	45	50	55	60	65	70	70
Lump sum payments <sup>4</sup>	3	2	1	0	0	0	0	0	0
Administration	111	142	166	186	206	221	231	240	242
<b>Total expenditure <sup>5</sup></b>	<b>5,735</b>	<b>6,910</b>	<b>8,511</b>	<b>10,223</b>	<b>12,016</b>	<b>13,670</b>	<b>14,858</b>	<b>16,200</b>	<b>17,143</b>
Excess of income over expenditure	682	378	46	-339	-782	-1,173	-1,486	-1,841	-2,101
Investment income	2,678	1,371	1,624	1,862	2,072	2,249	2,397	2,515	2,602
<b>Fund balance at end of year</b>	<b>38,156</b>	<b>46,957</b>	<b>55,431</b>	<b>63,350</b>	<b>70,295</b>	<b>76,118</b>	<b>81,018</b>	<b>84,871</b>	<b>87,712</b>
Fund balance as multiple of outgo on contributory & industrial injury pensions	63	47	39	34	30	27	25	23	22

1. All estimates are expressed in constant 2004-05 price terms.
2. The Government Grant meets the cost of basic pensions and the cost of the guaranteed minimum level of contributory retirement pension.
3. Excludes other income in year ending 30 June 2005.
4. Lump sum payments to former members of the Sugar Industry Pension Fund.
5. Excludes other expenditure in year ending 30 June 2005.

**Table G13 (F2) – Estimated expenditure on contributory pensions<sup>1</sup> : Financial variant F2**

(Rs million)

<b>Year ending 30 June</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>
<b>Contributory pensions</b>									
Retirement pension <sup>2</sup>	460	744	1,100	1,533	2,099	2,710	3,308	4,143	4,984
Widow's pension <sup>3</sup>	89	186	311	465	640	831	1,035	1,253	1,487
Invalidity pension	23	32	40	50	59	70	84	93	103
Return of contributions	8	16	18	19	19	19	19	19	20
<b>Total contributory pensions</b>	<b>580</b>	<b>978</b>	<b>1,469</b>	<b>2,067</b>	<b>2,817</b>	<b>3,630</b>	<b>4,446</b>	<b>5,508</b>	<b>6,594</b>
Retirement pension minimum guarantee <sup>4</sup>	36	30	33	38	42	41	33	42	50

1. All estimates are expressed in constant 2004-05 price terms.
2. Contributory retirement pension includes the additional amounts to meet the guaranteed minimum level (see 4).
3. Contributory widow's pension includes pensions payable to widows under and over age 60. Also includes contributory orphan's pensions.
4. Included in retirement pension above. Cost met by Government Grant.

**Table G14 (F2) – Estimated income, expenditure and balance of the Fund<sup>1</sup> : Financial variant F2**

(Rs million)

Year ending 30 June	2005	2010	2015	2020	2025	2030	2035	2040	2045
<b>Income</b>									
Government Grant <sup>2</sup>	5,050	5,808	6,964	8,210	9,491	10,669	11,459	12,371	12,976
Contribution income	1,367	1,620	1,924	2,232	2,570	2,976	3,434	3,945	4,533
<b>Total income <sup>3</sup></b>	<b>6,417</b>	<b>7,428</b>	<b>8,888</b>	<b>10,442</b>	<b>12,061</b>	<b>13,645</b>	<b>14,893</b>	<b>16,316</b>	<b>17,509</b>
<b>Expenditure</b>									
Basic pensions	5,014	5,777	6,931	8,172	9,449	10,628	11,426	12,330	12,925
Contributory pensions	580	978	1,469	2,067	2,817	3,630	4,446	5,508	6,594
Industrial injury pensions	27	35	55	70	80	100	115	135	155
Lump sum payments <sup>4</sup>	3	2	1	0	0	0	0	0	0
Administration	111	152	190	230	274	318	360	408	451
<b>Total expenditure <sup>5</sup></b>	<b>5,735</b>	<b>6,944</b>	<b>8,646</b>	<b>10,539</b>	<b>12,620</b>	<b>14,676</b>	<b>16,347</b>	<b>18,381</b>	<b>20,125</b>
Excess of income over expenditure	682	484	242	-97	-559	-1,031	-1,454	-2,065	-2,616
Investment income	2,678	2,495	3,293	4,237	5,334	6,607	8,112	9,894	12,014
<b>Fund balance at end of year</b>	<b>38,156</b>	<b>52,023</b>	<b>68,495</b>	<b>87,923</b>	<b>110,467</b>	<b>136,657</b>	<b>167,695</b>	<b>204,398</b>	<b>248,126</b>
Fund balance as multiple of outgo on contributory & industrial injury pensions	63	51	45	41	38	37	37	36	37

1. All estimates are expressed in constant 2004-05 price terms.
2. The Government Grant meets the cost of basic pensions and the cost of the guaranteed minimum level of contributory retirement pension.
3. Excludes other income in year ending 30 June 2005.
4. Lump sum payments to former members of the Sugar Industry Pension Fund.
5. Excludes other expenditure in year ending 30 June 2005.

**Table G13 (F3) – Estimated expenditure on contributory pensions<sup>1</sup> : Financial variant F3**

(Rs million)

<b>Year ending 30 June</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>
<b>Contributory pensions</b>									
Retirement pension <sup>2</sup>	460	735	1,058	1,424	1,873	2,320	2,718	3,248	3,732
Widow's pension <sup>3</sup>	89	185	304	447	601	760	919	1,074	1,226
Invalidity pension	23	31	38	46	54	61	72	78	84
Return of contributions	8	16	17	18	17	17	16	16	16
<b>Total contributory pensions</b>	<b>580</b>	<b>967</b>	<b>1,417</b>	<b>1,935</b>	<b>2,545</b>	<b>3,158</b>	<b>3,725</b>	<b>4,416</b>	<b>5,058</b>
Retirement pension minimum guarantee <sup>4</sup>	36	30	32	35	37	35	27	33	38

1. All estimates are expressed in constant 2004-05 price terms.
2. Contributory retirement pension includes the additional amounts to meet the guaranteed minimum level (see 4).
3. Contributory widow's pension includes pensions payable to widows under and over age 60. Also includes contributory orphan's pensions.
4. Included in retirement pension above. Cost met by Government Grant.

**Table G14 (F3) – Estimated income, expenditure and balance of the Fund<sup>1</sup> : Financial variant F3**

(Rs million)

Year ending 30 June	2005	2010	2015	2020	2025	2030	2035	2040	2045
<b>Income</b>									
Government Grant <sup>2</sup>	5,050	5,808	6,963	8,207	9,486	10,663	11,453	12,362	12,963
Contribution income	1,367	1,549	1,753	1,937	2,124	2,342	2,574	2,816	3,082
<b>Total income <sup>3</sup></b>	<b>6,417</b>	<b>7,357</b>	<b>8,716</b>	<b>10,144</b>	<b>11,610</b>	<b>13,005</b>	<b>14,027</b>	<b>15,178</b>	<b>16,045</b>
<b>Expenditure</b>									
Basic pensions	5,014	5,777	6,931	8,172	9,449	10,628	11,426	12,330	12,925
Contributory pensions	580	967	1,417	1,935	2,545	3,158	3,725	4,416	5,058
Industrial injury pensions	27	35	50	60	65	80	85	95	105
Lump sum payments <sup>4</sup>	3	2	1	0	0	0	0	0	0
Administration	111	147	177	207	237	265	287	312	330
<b>Total expenditure <sup>5</sup></b>	<b>5,735</b>	<b>6,928</b>	<b>8,576</b>	<b>10,374</b>	<b>12,296</b>	<b>14,131</b>	<b>15,523</b>	<b>17,153</b>	<b>18,418</b>
Excess of income over expenditure	682	429	140	-230	-686	-1,126	-1,496	-1,975	-2,373
Investment income	2,678	1,375	1,641	1,898	2,132	2,330	2,495	2,619	2,690
<b>Fund balance at end of year</b>	<b>38,156</b>	<b>47,127</b>	<b>56,057</b>	<b>64,647</b>	<b>72,380</b>	<b>78,920</b>	<b>84,370</b>	<b>88,339</b>	<b>90,580</b>
Fund balance as multiple of outgo on contributory & industrial injury pensions	63	47	38	32	28	24	22	20	18

1. All estimates are expressed in constant 2004-05 price terms.
2. The Government Grant meets the cost of basic pensions and the cost of the guaranteed minimum level of contributory retirement pension.
3. Excludes other income in year ending 30 June 2005.
4. Lump sum payments to former members of the Sugar Industry Pension Fund.
5. Excludes other expenditure in year ending 30 June 2005.

**Table G13 (F4) – Estimated expenditure on contributory pensions<sup>1</sup> : Financial variant F4**

(Rs million)

<b>Year ending 30 June</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>
<b>Contributory pensions</b>									
Retirement pension <sup>2</sup>	460	735	1,058	1,424	1,873	2,320	2,718	3,248	3,732
Widow's pension <sup>3</sup>	89	185	304	447	601	760	919	1,074	1,226
Invalidity pension	23	31	38	46	54	61	72	78	84
Return of contributions	8	16	17	18	17	17	16	16	16
<b>Total contributory pensions</b>	<b>580</b>	<b>967</b>	<b>1,417</b>	<b>1,935</b>	<b>2,545</b>	<b>3,158</b>	<b>3,725</b>	<b>4,416</b>	<b>5,058</b>
Retirement pension minimum guarantee <sup>4</sup>	36	30	32	35	37	35	27	33	38

1. All estimates are expressed in constant 2004-05 price terms.
2. Contributory retirement pension includes the additional amounts to meet the guaranteed minimum level (see 4).
3. Contributory widow's pension includes pensions payable to widows under and over age 60. Also includes contributory orphan's pensions.
4. Included in retirement pension above. Cost met by Government Grant.

**Table G14 (F4) – Estimated income, expenditure and balance of the Fund<sup>1</sup> : Financial variant F4**

(Rs million)

Year ending 30 June	2005	2010	2015	2020	2025	2030	2035	2040	2045
<b>Income</b>									
Government Grant <sup>2</sup>	5,050	5,808	6,963	8,207	9,486	10,663	11,453	12,362	12,963
Contribution income	1,367	1,549	1,753	1,937	2,124	2,342	2,574	2,816	3,082
<b>Total income <sup>3</sup></b>	<b>6,417</b>	<b>7,357</b>	<b>8,716</b>	<b>10,144</b>	<b>11,610</b>	<b>13,005</b>	<b>14,027</b>	<b>15,178</b>	<b>16,045</b>
<b>Expenditure</b>									
Basic pensions	5,014	5,777	6,931	8,172	9,449	10,628	11,426	12,330	12,925
Contributory pensions	580	967	1,417	1,935	2,545	3,158	3,725	4,416	5,058
Industrial injury pensions	27	35	50	60	65	80	85	95	105
Lump sum payments <sup>4</sup>	3	2	1	0	0	0	0	0	0
Administration	111	147	177	207	237	265	287	312	330
<b>Total expenditure <sup>5</sup></b>	<b>5,735</b>	<b>6,928</b>	<b>8,576</b>	<b>10,374</b>	<b>12,296</b>	<b>14,131</b>	<b>15,523</b>	<b>17,153</b>	<b>18,418</b>
Excess of income over expenditure	682	429	140	-230	-686	-1,126	-1,496	-1,975	-2,373
Investment income	2,678	2,487	3,261	4,161	5,200	6,402	7,827	9,534	11,597
<b>Fund balance at end of year</b>	<b>38,156</b>	<b>51,843</b>	<b>67,769</b>	<b>86,289</b>	<b>107,611</b>	<b>132,345</b>	<b>161,760</b>	<b>196,958</b>	<b>239,591</b>
Fund balance as multiple of outgo on contributory & industrial injury pensions	63	52	46	43	41	41	42	44	46

1. All estimates are expressed in constant 2004-05 price terms.
2. The Government Grant meets the cost of basic pensions and the cost of the guaranteed minimum level of contributory retirement pension.
3. Excludes other income in year ending 30 June 2005.
4. Lump sum payments to former members of the Sugar Industry Pension Fund.
5. Excludes other expenditure in year ending 30 June 2005.



