Aruba

Report to the Government

Actuarial review of the General Old-Age Pension Scheme and the General Widows and Orphans Insurance Scheme as of 30 April 2003

The International Financial and Actuarial Service
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Abbreviations and acronyms

Afl	Aruban florin currency
AOV	General Old Age Pension Scheme (administered by the SVB)
AWW	General Widows and Orphans Insurance Scheme (administered by the SVB)
CBS	Central Bureau of Statistics (Aruba)
GAP	General average premium, defined in the context of this report as the average level contribution rate required over the next 60 years to fully cover total expenditure during that period
GDP	Gross domestic product
ILO	International Labour Office
IMF	International Monetary Fund
PAYG	Pay-as-you-go cost rate usually defined for a given year as total annual benefit expenditure (excluding administration and expenses other than for benefit payments) divided by total annual insurable earnings
SVB	Social Security (Insurance) Bank of Aruba
TFR	Total fertility rate

Exchange rate

As of 30 April 2003: 1 United States dollar = 1.77 Aruban florin.

Foreword

This actuarial review focuses on projecting the financial situation of the General Old Age Pension Scheme (AOV) and the General Widows and Orphans Insurance (AWW) schemes administered by the Social Security (Insurance) Bank of Aruba (SVB). In view of the nature of the schemes, the pay-as-you-go cost rates represent the projected financial requirements to be provided through contributions collected and other sources to meet the benefit promises for which the AOV and AWW schemes are legally obliged. The actuarial review estimates the financial implications of different possible parametric reforms that could reduce long-term costs.

This report includes fours chapters and three annexes. The report chapters contain a brief analysis of recent experience and the performance of the scheme followed by a discussion of assumptions and results of population, economic and pension expenditure projections up to 2062. The final chapter of the report addresses several policy issues requiring attention and for which recommendations are made to ensure the long-term financial viability of the schemes.

The annexes contain a summary of AOV and AWW financing and pension provisions, a description of the methodology used for the projections and detailed tables of the key data and assumptions. Detailed projection results of the *status quo* provisions under the pessimistic and optimistic scenarios are provided in annex 3.

Acknowledgements

At the request of the Social Security (Insurance) Bank of Aruba, the ILO was contracted to perform a financial and actuarial review of the General Old Age Pension Scheme (AOV) and the General Widows and Orphans Insurance (AWW).

The Director-General of the ILO appointed Messrs Derek Osborne and Dorset Cromwell to perform this assignment under the technical supervision of the Financial, Actuarial and Statistical Services Branch of the Social Protection Sector of the ILO.

The experts visited Aruba in May 2003 to gather the necessary data and hold discussions with key stakeholders. During his visit he met with the acting Minister of Public Health and the Environment, officials of the Central Bank of Aruba and the Central Bureau of Statistics, representatives of workers, employers and the Social Economic Council of Aruba (SER), and senior management of the SVB.

A subsequent mission took place in November 2003 to present the draft report to the authorities.

The ILO Director-General expresses his appreciation to the Director of the Social Security (Insurance) Bank of Aruba, Mr. Raphael Blume. Gratitude is also extended to Mr. Herbert Diaz who provided the actuary with data and other general information, as well as to the staff of the SVB for their collaboration and assistance provided throughout this actuarial review.

Executive summary

Aruba is presently emerging from a short period of negative economic growth that followed an extended period of expansion and substantial immigration. For the Old Age and Widows and Orphans Pension Schemes, the influx of workers has had a positive impact on finances by increasing the contribution base without much of an increase in current annual expenditure. As a result, no increases in the contribution rate have been necessary since 1998. However, neither the ceiling nor pensions have been adjusted even though cumulative price inflation since 1998 has been estimated at approximately 15 per cent. Steps should be taken to ensure the real value of the contributory base and benefits is restored and maintained in future as foreseen in the spirit of the law and objectives of the social security provisions. More details on the review of past experience under the SVB are provided in chapter 1.

The effects of ageing populations and the rising cost of providing adequate social security pensions are challenges that now face most industrialised countries. While Aruba still has a relatively young population and pension costs that most consider affordable, low birth rates and increased longevity will have a gradual but significant impact on the cost of providing lifetime pensions to all those who once lived in Aruba. The ratio of persons aged 16-59 to those 60 and over will likely decrease from 5.4 persons in 2003 to 1.9 persons in 2062 according to ILO estimates. It is noted that the single-most influential factor on long-term costs of a pension system is economic growth.

Since the lifetime pensions that today's young workers in Aruba look forward to receiving when they reach normal retirement age will be paid many decades from today, it is extremely important that estimates of future pension obligations be made. Along with financial projections of Aruba's two national pension schemes, this review provides actuarial projections to 2062 on the basis of *status quo* provisions for benefits and financing. In addition, the cost implications of different parametric reforms to maintain the financial viability of the system are presented. These results should enable the Government of Aruba to take proactive steps ensuring future pensions are both adequate and affordable as well as ensuring the population is adequately covered.

There are inherent uncertainties in the choice of demographic and financial assumptions underlying the outcome of this actuarial review. For this reason, demographic and economic assumptions have been categorized according to three scenarios representing a plausible range of outcomes and dubbed pessimistic, intermediate and optimistic. More details on the development of assumptions for this actuarial review can be found in the last section of chapter 1 and in chapter 2.

The projected combined PAYG cost rates for the AOV and AWW schemes under the three scenarios are expected to reach 27 per cent over the next 30 years, and to remain stable thereafter. For the AOV scheme, PAYG cost rates are expected to increase to more than twice present levels, before levelling off in the latter part of the projection period at close to 27 per cent. For the AWW scheme, the PAYG cost rates are expected to decrease to around 0.8 per cent of insurable earning as the demographic ratio of pensioners relative to contributors is expected to fall slightly.

The long-term cost of the social insurance system of Aruba expressed in terms of the General average premium limited to the next 60 years is estimated to range between 18.3 and 28.5 per cent of insurable earning for the optimistic and pessimistic scenarios respectively. The projections under the intermediate scenario under *status quo* provisions indicate a General average premium of 22.7 per cent of insurable earnings for the next 60

years. This must be compared with the present contribution rate set at 13.5 per cent which will inevitably require adjustments if all things remain the same.

The key projection results of the intermediate scenario based on *status quo* provisions for financing and benefits in place on May 1, 2003, are:

- the population will continue to increase, though at a decreasing rate, reaching around 122,000 in 2062;

- the ageing of the general population will have a major impact on the ratio of workers to pension-age residents, with the number of working-age residents to those of pension-age falling from 5.7 in 2002 to only 1.9 in 2062,

- while the cost of the AWW scheme is expected to fall and remain at around 0.8 per cent of insurable earnings, AOV pension costs are projected to more than double over the next 30 years, fluctuating around 27 per cent of insurable earnings, thereafter.

Under the pessimistic scenario, PAYG cost rates are projected to approach 40 per cent, while under the optimistic scenario, they will peak at just over 20 per cent of insurable earnings. Lower pension expenditure could be realised if parametric reforms were enforced such as increasing the retirement age, discounting pensions for failure to make contributions, requiring a minimum number of years of insurance before a pension is paid, or expanding the insurable earnings base by either improving compliance or increasing the ceiling.

More details on the demographic and financial projections of the AOV-AWW schemes can be found in chapter 3.

Various policy and parametric reforms have been studied on the basis of the requests received from the Government. The main financial implications for each of them are presented below in terms of the GAP as of today and projected PAYG cost rates for the years of 2032 and 2062. Care must be exercised in interpreting these alternative outcomes and in taking account of the underlying assumptions.

Long-term impact for possible parametric and policy reforms of the AOV and AWW schemes
(% of insurable earnings)

	Scenarios	General average premium (60-year)	Pay-as-you-go cost rates	
			2032	2062
1.	Intermediate scenario – *Status quo* provisions	22.7	26.6	27.2
2.	Adjust pensions-in-payment on basis of price inflation (adjustments in line with changes in the average wage are preferable but may be more costly)	15.9	18.7	13.3
3.	Increase normal retirement age to 62 over a 6-year transition period	20.1	24.4	25.3
4.	Increase normal retirement age to 62 over a 6-year transition period and do not collect contributions from insured workers aged 60-61	20.6	24.7	25.2
5.	Increase normal retirement age to 65 over a 15-year transition period	17.6	20.9	22.0
6.	Effectively enforce discounting of individual benefits to account for periods of non-payment of contributions	21.6	25.9	26.0
7.	Apply a 10-year residency qualifying condition for benefits	20.8	24.7	25.2
8.	Improve compliance in collecting contributions and increase the ceiling on insurable earnings such that the insurable earnings base will increase by 15 per cent	19.7	23.8	24.3
9.	Set married pensions at 1.5-times single pension	21.7	26.2	26.7
10.	Set Christmas bonus at 40per cent of the monthly pension	22.1	26.6	27.1
11.	Lower married pensions and lower Christmas bonus (combined effect of reforms under (9) and (10) above)	21.1	25.5	26.0

The recommendations following the results of the actuarial review of the AOV and AWW schemes as of 30 April 2003 are summarised as follows:

1. The financing of the AOV and AWW schemes should be reviewed. The legislation could be amended to explicitly state the funding objective of each scheme separately such that the pension fund reserve never falls below 1-time annual expenditure and the contribution rate and benefit provisions of today and in future – could vary over time –allows satisfaction of this funding objective. This funding ratio objective could be set at a higher multiple such as 1.5 or 2.0 depending on the investment opportunities and government principles. For the long-term pensions, regulations could stipulate the schedule of contribution rates and required gradual increases over time in line with projected increases in the cost of benefits. This would of course require negotiations with social partners. All parties become more aware of the actual cost of the scheme. This is necessary to guarantee the long-term financial viability of the scheme over the next 60 years. Future regular actuarial reviews undertaken every three years will then serve to assess the validity of the set schedule of contribution rates to meet the long-term funding rule. If changes in financing or benefit provisions are considered necessary, the actuary should recommend alternatives for ensuring the financial viability of the scheme.

2. The creation of a national wage index should be initiated to determine changes in wages over time. This index should then be used to annually adjust the wage ceiling on which contributions are based, all AOV and AWW pensions, as well as the minimum wage (cf. section 4.2).

3. The normal retirement age should be gradually increased to at least age 62 with the possibility of further increases to 65. Such an increase, while consistent with improved health and longer life expectancies, would serve to reduce long-term pension costs by approximately 2 percentage-points of insurable earnings (cf. section 4.3).

4. The provisions for the married pension should be reviewed so that persons will not be able to qualify for a larger pension simply because they change their personal living patterns. Also, the policy of refunding contributions made by a couple that exceed one full contribution (commonly called restitution) should also be reviewed so that couples of different income levels are treated equitably (cf. section 4.5).

5. Since only about 20 per cent of private sector workers have a complementary private pension, the Government should consider enhancing the benefit provisions of its public pension scheme and / or provide tax incentives for long-term retirement savings so that higher income replacement levels are available to the elderly.

6. Measures should be taken to improve the compliance for collecting contributions from the legally insured workforce and to review the definition of the ceiling on insurable earnings as a higher multiple of the actual national average wage.

7. The maintenance of individual records and the communication of all information on actual contribution collection activities should be reviewed and strengthened following close consultations between the Tax Office and the SVB.

8. Several practices that are not supported by legislation should be formalised by having the rules placed in the relevant Ordinance. These include amongst others equal qualifying conditions for men and women for an AWW pension and the payment of a Christmas bonus to AWW pensioners (cf. section 4.1).

9. Several requirements of the law are currently not being followed. The provision on annual indexation of pensions should be complied with. The provision on discounting of pensions by 3 per cent for each year that annual contributions were not made due to the negligence of the insured should be complied with or removed from the law if no longer considered appropriate (cf. section 4.1).

    - If it were assumed that AOV/AW pensions are adjusted annually in line with price increases, future individual pensions and thus future PAYG cost rates would be lower. Since the initial pension is not tied to wages before retirement, the replacement ratio would decline over time and instead of 22.7 per cent, the General average premium would be 15.9 per cent. For the intermediate scenario productivity increases or increases in real wages were assumed at 1.25 per cent.

    - Given that pension adjustments based on price increases will likely make AOV pensions less relevant over time, annual adjustments based on average increases in wages are recommended. To put this into practice, however, the creation of a national wage index would be required. Such an index may be created and published by the Central Bureau of Statistics. In the interim, the SVB could use the insurable earnings on which AZ/OZ contributions are based to create a wage index.

    - As an alternative to annual pension increases, it has been suggested that the basic pension rate (now Afl 900) be tied to the minimum wage. With the minimum wage currently at Afl 1,200 per month, the maximum single pension is 75 per cent of the minimum wage. This alternative to annual automatic increases may be justified once the minimum wage is adjusted at least every

three years and given a relatively stable economic situation prevails throughout the period (more frequent adjustments should take place in case of volatility), and the adjustments are tied to actual increases in the national average wage. The creation of a national wage index would also be required if this method of adjusting pensions is adopted.

- For the ceiling on insurable earnings, the ordinance does not stipulate that annual adjustments should take place. However, there has been a practice of annual increases, although none has occurred since 1998. Similar to the manner recommended for pensions, it is recommended that the ceiling be adjusted annually in line with changes in the actual average wages, and that the rules governing such an increase be placed in the Ordinance.

- The legislation could be formulated in such a way that it calls for automatic and regular adjustments to pensions in payment and to the ceiling on insurable earnings on the basis of a mechanism and conditions to be stated in regulations. The periodicity could state that these adjustments take place at least every year or so, given certain changes in the economy are observed (inflation and changes in average wage meeting some threshold values). The basis for adjustment could be stated as a percentage of the observed changes in the selected average wage basis over the period (e.g. 1-3 year) immediately preceding the month in which adjustments are made.

Since major changes have been observed in Aruba's economy and population dynamics have evolved over recent years, a comprehensive review of Aruba's pension system is encouraged to ascertain the consistency of its benefit and financing provisions in line with socio-economic conditions, social policy and the financial capacity of the population and the State. This actuarial review provides the basis to policy makers and social partners in Aruba to decide on reforms ensuring Aruba's pension system remains adequate, equitable and affordable both today and in future. Public consultations with social partners and all stakeholders are encouraged so that policy changes receive the wide-ranging support required for acceptance by the wider population and the administrations involved and for success in their implementation.

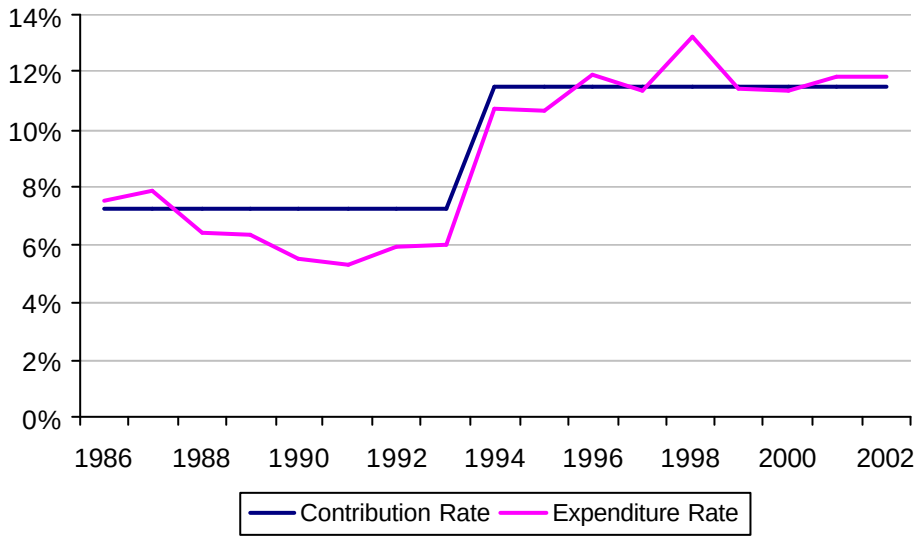
1. Review of past performance under the pension system of Aruba

The Social Security (Insurance) Bank of Aruba administers the two national pension systems including the General Old Age Pension Scheme and the General Widows and Orphans Insurance Scheme, hereafter referred to as the AOV and the AWW respectively. The AOV provides a basic pension for everyone who has lived or worked in Aruba when they reach normal retirement age (now 60), while the AWW provides entitlements to a survivors benefit for adults whose spouse dies, and for orphans under the age of 24. These pension systems date back to 1960 and were created with similar provisions to the existing Dutch national pension system. Prior to 1986, these systems covered the six islands that make up the Netherlands Antilles but since then, the AOV and AWW relate only to Aruba. Both systems are financed on a PAYG basis with contributions collected by the Government's Tax Office.

The SVB also administers the Workers Sickness Leave Scheme, the Workers Accident Scheme and the Severance Payment Scheme. As this review focuses on long-term finances of Aruba's pension systems, details of these other schemes are not included in this report. While the AOV and AWW are two separate schemes and are accounted for as such, AWW surpluses/deficits are added/subtracted from the AOV reserves. Both schemes are discussed in parallel although the actuarial projections are indicated separately.

The following chart illustrates the trend over the past 17 years of the actual expenditure (PAYG) rate compared with the actual contribution rate, both expressed as a percentage of insurable earnings. As shown, expenditure has closely matched income from contributions, especially since the pension rate was increased in 1993 and 1994.

Chart 2. Contribution and expenditure rate, 1986 to 2002 (AOV and AWW schemes)



1.1. Review of recent financial experience

The following table highlights income and expenditure of the AOV and AWW schemes over the past five years.

Table 1. Review of AOV and AWW finances, 1998 to 2002 (in millions of Afls.)

	1998	1999	2000	2001	2002
AOV scheme					
+ Contributions	96.5	114.3	118.8	123.7	120.9
+ Net Interest Earned	(0.1)	0.6	3.4	3.6	3.8
- Benefits	109.6	111.4	115.6	125.5	126.4
- Admin. Costs	1.4	1.3	1.6	1.7	1.8
= Surplus/(Deficit)	**(14.6)**	**2.2**	**5.0**	**0.1**	**(3.5)**
AWW scheme					
+ Contributions	17.0	20.3	21.0	21.8	21.3
+ Net Interest earned	(1.2)	(1.5)	0.5	0.4	0.4
- Benefits	9.3	9.3	10.0	10.2	10.3
- Admin. Costs	0.5	0.4	0.6	0.6	0.6
= Surplus/(Deficit)	**6.0**	**9.1**	**10.9**	**11.4**	**10.8**
Surplus/(Deficit) under combined AOV and AWW	**(8.6)**	**11.3**	**16.4**	**11.5**	**7.3**

Note: Totals may be off due to rounding.

As shown above, the AOV income has closely matched expenditure while the AWW has experienced surpluses of about 50 per cent of contributions. Overall, combined surpluses have fallen over the past two years.

The most recent set of major changes to the AOV and AWW occurred in 1998 when the combined contribution rate for the AOV and AWW schemes was increased from 9.5 per cent to 13.5 per cent, and the ceiling on insurable earnings and pension rates were increased by 2.75 per cent. Since then there have been no changes to pensions or the ceiling, although cumulative price inflation has totalled 15 per cent.

1.2. Comparison of pension systems between Aruba and The Netherlands

While Aruba's social insurance schemes were initially quite similar to those existing in The Netherlands, changes over the years have resulted in several differences that are highlighted in the following table.

Table 2. Comparison Of AOV-AWW parallel pensions in The Netherlands and Aruba

	The Netherlands	Aruba
Normal retirement age	65	60
Ceiling on insurable earnings	Just over twice average earnings	1.7 times average insurable earnings
Benefit rate per year of residency	2 per cent	2.22 per cent
Married Rate / Single rate	1.37	1.68
Married pension	Dependent on age and income of younger spouse	Not dependent on age or income of younger spouse
Christmas/Holiday allowance	5 per cent of monthly pension	75 per cent of monthly pension
Adjustment of pensions	Semi-annual	Annual (none since 1998)
Single pension as per cent of average insurable earnings	35 per cent	37 per cent
Married pension as percentage of average insurable earnings	49 per cent	64 per cent
Full pension as percentage of ceiling	36 per cent	22 per cent
Survivors' benefit	Means tested	No means test
Maximum age for orphans	16, or 20 if still in school	14, or 24 if still in school

Note: Average insurable earnings in Aruba estimated from ZV/OV records. Data for Netherlands obtained from a World Bank report by Edward Whitehouse, 2002: "Pension Systems in 15 Countries Compared: The Value of Entitlements".

Differences in design parameters are expected after 40 years given the different economic, political and social conditions in the two countries. The most significant change, though, occurred in Aruba, where the normal retirement age, which was initially 65, was lowered to 62 in 1975 and then to 60 in 1992. Also, there were significant increases in the pension rate in 1993 and 1994 when the pension more than doubled in two years. (See Chart 9 in Annex I)

Another noteworthy aspect of income in old age that should be considered when comparing the social security pension systems in Aruba and The Netherlands is the significant difference in the level of employer-sponsored pension plans. IMF estimates suggest that only 20 per cent of workers in Aruba have private pension arrangements compared with 91 per cent in The Netherlands.

1.3. Design parameters and performance indicators

Given the broad range of objectives of a pension system, evaluating its performance could be rather difficult. Such an assessment should consider the achievement of the scheme's overall goals as they pertain to the level of coverage and the provision of adequate and reasonable benefits and pensions, as well as how efficiently it is administered and how prepared it may be to meet rising costs over time. The following table provides a summary of several key indicators of coverage and benefit levels provided by the AOV-AWW pensions and the schemes' performance in 2002.

Table 3. Current AOV-AWW performance indicators, 2002

Ratio of ceiling to average insurable earnings	1.7
AOV single pension rate, as percentage of average insurable earnings	37
Average single AOV Pension	
• as a percentage of average insurable earnings	32
• as percentage of minimum wage	65
Proportion of the pop. of age 60+ receiving an AOV pension	94
AOV & AWW contribution rate	13.5
AOV & AWW expenditure	
• as a percentage of average insurable earnings	13.2
• as percentage of GDP	4.0
SVB administrative expenses, as a percentage of average insurable earnings	0.2

Note: Average insurable earnings in Aruba have been estimated on basis of ZV/OV records.

2. Demographic and economic assumptions

Future AOV-AWW income and expenditure will be closely linked to future changes in the size and age structure of the population, employment levels, economic and wage growth and inflation. Therefore, to best estimate future finances, projections of Aruba's total population and economic activity are required. Population projections provide estimates of the size and composition of the labour force, while projections of gross domestic product (GDP) and worker productivity growth indicate how many workers are needed in the economy and what their likely incomes will be. Since these factors are both directly and indirectly interrelated - for example, changes in population directly affect the economy and economic performance impacts personal behaviour such as migration - population and economic projections are performed together to ensure that the assumptions made produce consistent results.

For this review 60-year projections of the population, economy and AOV-AWW finances have been performed. Given the significant uncertainty inherent in forecasting such a long period, projections have been performed using three sets of assumptions. These assumptions have been developed following analysis of historical trends and on plausible future experience. Since the population and economic projections are only an intermediary step, only a summary of the assumptions and projection results are discussed in this chapter. Further details and results may be found in annexes 2 and 3.

2.1. Demographic assumptions

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

The last official population census took place in 2000. It is noted that there has been a significant influx of immigrants. As a result the population increased from 66,687 in 1991 to 90,505 in 2000, an annual average growth rate of 3.5 per cent. Net immigration during this period averaged 1,500 per annum and was due to a labour shortage created by rapid expansion in the hotel sector. In recent years, immigration levels have declined but still show more persons entering than leaving Aruba.

The total fertility rate (TFR) represents the average number of children each woman of childbearing age would have if she had all her children in a particular year. If there is no migration, a TFR of 2.1 is required for each generation to replace itself. In 2001, Aruba's TFR was estimated at 1.85, having fallen from 2.28 in 1991. The Central Bureau of Statistics reported that there are between 200 and 300 children born annually in Aruba but who cannot be registered in a timely manner in the Municipality records. This is explained by the fact that their parents often possess a work permit but cannot, in principle, bring their new child to Aruba until an application for a residence permit is filed with the Government and permission received for the official registration of the establishment/birth of the child. The impact of this legal requirement on the statistics serving to determine the TFR should be accounted for ideally.

Further minor improvements in life expectancy are assumed in line with the United Nations population forecast approach and despite views to the contrary as expressed in a 2000 study by the Department of Health on growing lifestyle problems in Aruba that

should affect longevity. The increasing prevalence of HIV and AIDS in the Caribbean region may retard the rate of previously expected improvements if Aruba ever gets affected with significance.[1] For these projections improvements in mortality are assumed to occur in accordance with UN estimates. While deaths due to HIV and AIDS have not been explicitly accounted for, the rate of mortality improvements chosen considers the effects of the HIV/AIDS pandemic.

2.2. Economic assumptions

After growing at an average rate of over 4 per cent per annum between 1996 and 2000, the economy of Aruba declined in 2001 and 2002.[2] This downturn is reported to have been mainly due to a lull in investment activity and weak tourism arrivals following the recession in the United States and the terrorist attacks of 2001. Economic growth of around 3 per cent per annum is forecast for the medium term to account for anticipated higher tourism capacity and continued investment. This is in line with the perspectives of policy-makers received in the context of this actuarial review. The economic projections assume a corresponding stable and positive economic growth and labour productivity in all years. Although simplistic, they approximate usual economic cycles and volatility that encompass periods of expansion and recession. They also account for projected changes in the population and labour force that will provide the capacity for additional output through more workers and increased productivity.

The following table indicates the principal demographic and economic assumptions of the three scenarios for the projections of the AOV and AWW schemes under *status quo* provisions for benefits and financing sources. Further details may be found in annex 2.

Table 4. Main demographic and economic assumptions

		Pessimistic	Intermediate	Optimistic
Ultimate fertility (from 1.86)		1.7 in 2021	Constant at 1.86	2.0 in 2021
Mortality improvements^		Slow	Medium	Fast
Net in-migration		Zero in all years	Decrease from 300 in 2003 to 200 in 2021, constant thereafter	Decrease from 700 in 2003 to 600 in 2011 to 400 in 2021, constant thereafter
Real GDP Growth	Short-term[1]	2.25%	3.0%	3.5%
	Med.-term	1.25%	2.0%	2.75%
	Long-term	0.75%	1.5%	2.25%
Productivity increases		1.0%	1.25%	1.5%
Inflation rate		3.0% p.a.	3.0% p.a.	3.0% p.a.

Note: Using UN mortality improvement rates.

[1] Short-term (through 2007) GDP growth assumptions for the intermediate scenario are those assumed by the IMF in their 2002 Article IV Consultation report.

Additional details on the economic assumptions such as salary growth rates and employment projections are discussed in chapter 3.

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[1] The prevalence of HIV/AIDS infection in Aruba is estimated at 0.4 per cent today as reported by the CBS.

[2] Vide IMF (2002): *Article IV Consultation.*

2.3. AOV-AWW scheme-specific assumptions

The main AOV-AWW scheme-specific assumptions include:

- the insurable earnings ceiling will increase annually in line with the assumption on national average wage growth beginning in 2004;
- the flat-rate pension, now equivalent to Afl. 900, will increase annually in line with national average wage growth beginning in 2004, and all other AOV and AWW pensions in payment will be adjusted so that current proportional relationships are maintained;
- the number of new widow(er)s and orphans and their age distribution will remain similar to experience over recent years;
- the number of new AOV pensions awarded will be equivalent to the number of residents attaining normal retirement age in Aruba;
- the average discount rate for new pensions will be of 14 per cent;
- the average annual rate of return on investments of the reserve fund will be of 5.5 per cent;
- administrative expenses for the AOV and AWW will remain at their current relative level of 1.4 per cent and 6.1 per cent of benefit expenditure respectively.

3. Actuarial projections of the AOV and AWW schemes under *status quo* provisions as of valuation date

This chapter presents and analyses projections of the AOV and AWW schemes up to 2062 under current financing and benefit provisions. Since the surpluses and deficits of both schemes accrue into a single fund, the finances of both have been projected together despite the principle that they should be maintained separately.

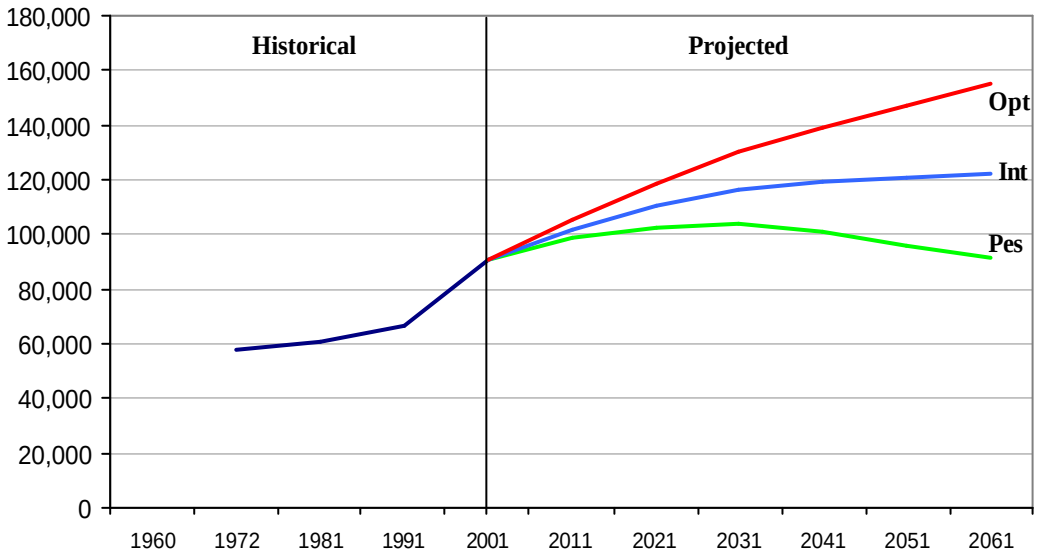
Consistent with the population and economic projections presented in the previous chapter, three sets of financial projections have been modelled. Sensitivity tests have also been performed on the basis of the intermediate scenario. [3]

3.1. Projections of the general population and SVB membership

The insured membership and beneficiaries under the SVB are directly determined from the projections of the general population of Aruba.

The following chart shows how Aruba's population increased since 1972, along with projected populations for each of the three assumption sets. While continued population growth is forecast in all three scenarios for the near to medium term, the pessimistic scenario suggests declines towards the end of the projection period.

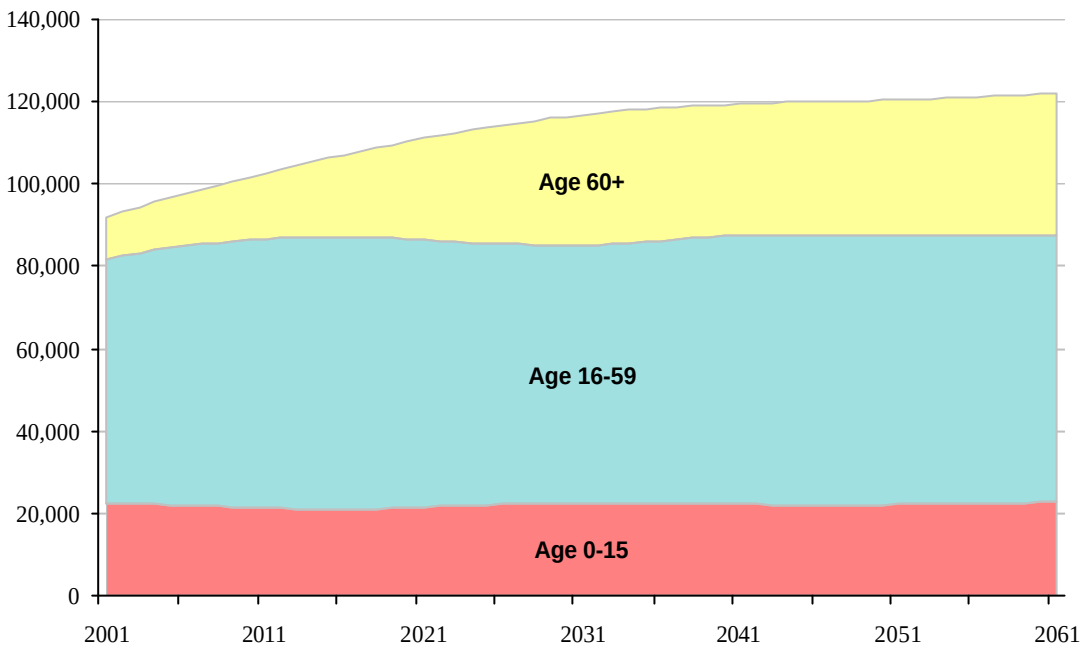
Chart 3. Population of Aruba, 1960 to 2001 and projections to 2062 according to 3 sets of population assumptions



[3] Vide chapter 4.

For the projections under the intermediate scenario, the age distribution of the total population is shown below. The changes in the relative size of each age group – fewer children and many more pension-age persons - illustrate the forecasted ageing of Aruba's population. Such ageing is a direct result of reducing birth rates and improvements in longevity.

Chart 4. Projected population of Aruba, intermediate scenario, 2001 to 2061



Highlights of the intermediate scenario for population projections are summarized as follows:

- the total population will increase through the projection period but grow at a reducing rate reaching just over 120,000;
- the number of children (under 16) will remain relatively constant at around 22,000 while the pension-age (60 and over) population will increase by just under 3.5 times;
- around 2018, Aruba will have more pension-age residents than children; and
- the number of working-age persons for each pension-age resident will fall from 5.7 to 1.9.

Table 5. Population projections to 2062 under the intermediate scenario

Year	Total	Age 0 - 15	Age 16 - 59	Age 60 & over	Ratio of Persons 16-59 To 60 & Over
2000	90,511	22,331	58,042	10,139	5.7
2003	94,539	22,352	60,965	11,222	5.4
2004	95,552	22,331	61,584	11,638	5.3
2005	96,557	22,095	62,306	12,157	5.1
2006	97,556	21,991	62,892	12,673	5.0
2007	98,551	21,900	63,418	13,233	4.8
2008	99,541	21,737	63,987	13,817	4.6
2012	103,448	21,206	65,645	16,598	4.0
2022	111,820	21,653	64,420	25,748	2.5
2032	117,209	22,530	62,648	32,030	2.0
2042	119,610	22,119	65,455	32,036	2.0
2052	120,603	22,207	65,375	33,020	2.0
2062	122,293	22,680	65,051	34,562	1.9

The CBS reports that the results of the Census 2000 may be under-estimating the number of potential beneficiaries under the SVB schemes in future. It encourages the use of the database of the Municipality whereby every person who is registered is in principle entitled to a pension from the SVB, partial or complete, when he/she becomes 60. In relation to the Census 2000, this implies that nearly 6,250 persons would not have been recorded as the Municipality registry indicated 96,754 persons and the Census 2000 results indicated a total population of 90,506 persons.

The life expectancy at 60 represents the most important figure for the SVB. In 2000, life expectancy at age 60 was estimated at 16 years for males and 26 years for females.

In Annex 3, there are two tables, Table 30 and 31, showing the breakdown of the projected population by age groups (intermediate scenario for population projections) and consistent with a normal retirement age of 62 and 65 respectively. [4]

For the SVB, where pension payments to the elderly represent the majority of expenditure, and contributions from workers are needed to finance these payments, the projected change in the population's age structure has significant long-term consequences.

Population ageing will also create major challenges for the Aruban Government, as a larger and older society will place increased and different demands on physical infrastructure, health and other social programmes. Therefore, proactive measures by both Government and the SVB are required to ensure that the needs of future generations will be sufficiently met.

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[4] Vide Central Bureau of Statistics (2002): *The people of Aruba: Continuity and Change*.

3.2. Terminology for interpretation of actuarial projection results

To illustrate the cost of future pension payments, expenditure is compared with the on which contributions are based, i.e. insurable earnings. The PAYG cost rate that results from dividing total expenditure by total insurable earnings. When applied to insurable earnings in a given year, this PAYG cost rate produces just enough contributions to cover pension and administrative costs for that year. The following formula illustrates the four components of the PAYG cost rate excluding administrative expenses.

$$\textbf{Pay-as-you-go cost rate} = \frac{\text{Total pension expenditure}}{\text{Total insurable earnings}}$$

$$= \frac{\text{No. pensioners}}{\text{No. contributors}} \times \frac{\text{Average pension}}{\text{Average insurable earnings}}$$

The first ratio is the demographic or support ratio that represents the number of pensioners per contributor. The second ratio, often called the replacement ratio, indicates the percent of average wage that is being replaced by the average pension. By estimating changes in each component the overall change in the PAYG rate may be understood quite easily. For example, if over the next 60 years the demographic ratio doubles (i.e. the number of contributors per pensioner falls by 50 per cent) the pay-as-you-go rate will double if the replacement rate remains the same. If the average pension increases faster than the average wage, the replacement rate increases from 50 per cent to 75 per cent over the next 60 years. The PAYG cost rate will increase by 50 per cent if the demographic ratio remains constant.

3.3. Demographic and financial results under *status quo* provisions

The following table shows the demographic and replacement ratios for both funds in 2002.

Table 6. PAYG components of the AOV and AWW schemes, 2002

	Demographic ratio (%)	Replacement rate (%)	Pay-as-you-go cost rate (%)
AOV	39	31	12.0
AWW	3.5	28	1.0

Note: The demographic ratio was determined using the other two factors, as the number of contributors is not known. The replacement rate is based on the number of actual pensioners, with a married pension counted as two pensioners. Administrative expenses are excluded from the pay-as-you-go rate.

The following charts illustrate the projected pay-as-you-go rates for the AOV and AWW schemes through 2062 under the intermediate scenario.

Chart 5. AOV PAYG cost rates
(% of insurable earnings)

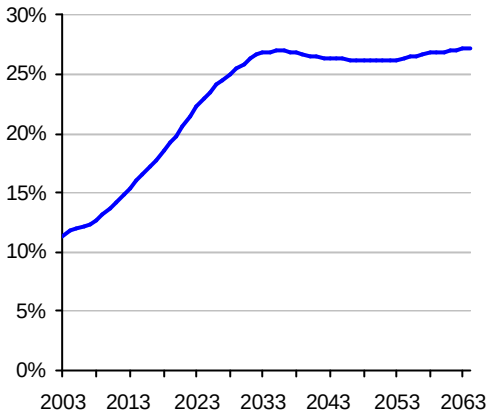
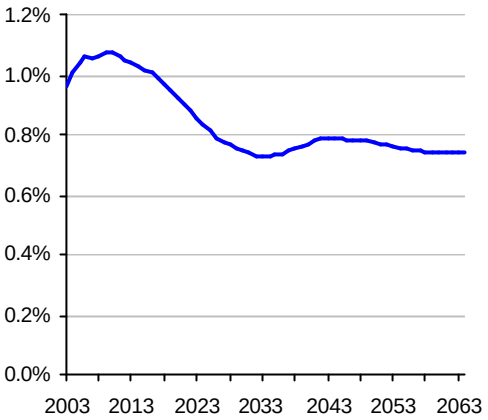


Chart 6. AWW PAYG cost rates
(% of insurable earnings)



As illustrated in Chart 6, the PAYG cost rate under the AWW is expected to decrease to 0.8 per cent of insurable earnings as the number of pensioners relative to the number of contributors (demographic ratio) is expected to fall slightly. For the AOV scheme, however, costs are expected to increase to more than twice present levels, before levelling off in the latter part of the projection period at close to 27 per cent.

Together, AOV and AWW pay-as-you-go rates are expected to reach almost 28 per cent within the next 30 years, and remain around that level thereafter. (See Chart 8) Because it has been assumed that pensions will be increased annually by the change in average insurable earnings, little change in the replacement rate is projected, except due to a likely increase in the discount rate resulting from recent immigrants who will qualify for a proportionately smaller pension in the coming decades. Therefore, most of the increased cost is due to an increasing demographic ratio (number of pensioners per contributor). As the population is assumed to stabilise in the long run, pay-as-you-go rates are expected to be relatively constant thereafter.

The following table shows the projected AOV and AWW expenditure for specific years along with pay-as-you-go rates and the value of benefits expressed as a percentage of GDP.

Table 7. Projected AOV-AWW benefit expenditure, intermediate scenario, 2002 to 2062

Year	Benefit expenditure (million Afl)			Benefit expenditure (% of insurable earnings)				Benefit expenditure (% of GDP)
	AOV	AWW	Total	AOV	AWW	Administration	Total	
2002	126	10	136	12,0	1,0	0,2	13,2	4,1
2003	125	10	135	11,1	0,9	0,2	12,2	3,8
2004	136	11	147	11,5	1,0	0,2	12,7	3,9
2005	148	12	160	11,8	1,0	0,2	13,0	4,0
2006	160	13	173	12,0	1,0	0,2	13,2	4,1
2007	173	14	187	12,2	1,0	0,2	13,4	4,2
2008	188	15	203	12,6	1,0	0,2	13,8	4,3
2012	264	18	282	14,6	1,0	0,3	15,9	4,9
2022	609	24	633	21,2	0,8	0,3	22,3	6,9
2032	1 157	30	1 187	26,3	0,7	0,4	27,4	8,5
2042	1 748	50	1 798	26,0	0,7	0,4	27,1	8,4
2052	2 652	74	2 726	25,7	0,7	0,4	26,8	8,3
2062	4 221	110	4 331	26,8	0,7	0,4	27,9	8,6

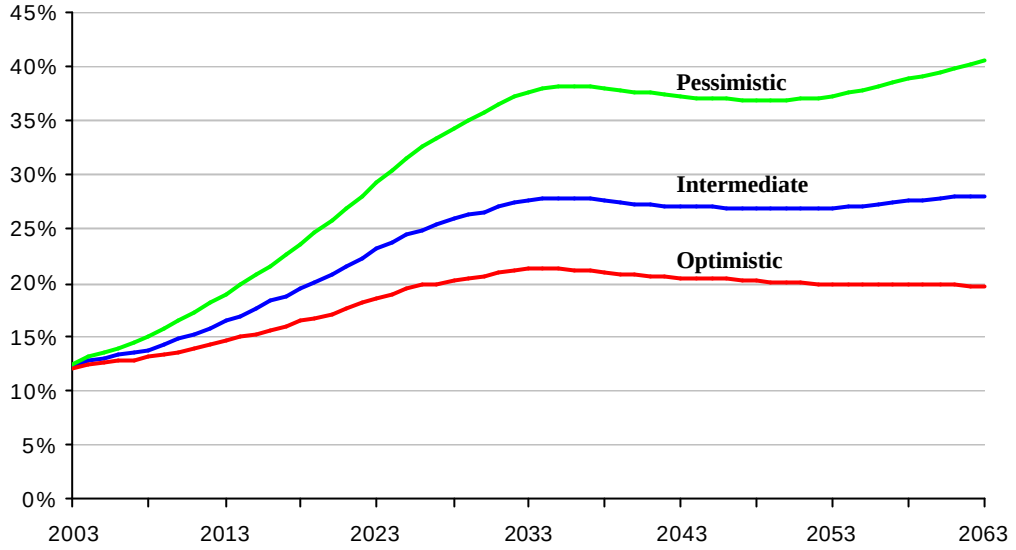
Given the uncertainty inherent in 60-year projections, two scenarios that encompass assumptions that are more and less optimistic than those of the base case assumption scenario have been modelled. These scenarios use as a base the population and economic projections discussed in the previous chapter along with scheme-specific assumptions as outlined in the following table.

Table 8. Alternative scheme-specific assumptions under the three projection scenarios

	Pessimistic	Intermediate	Optimistic
Average discount rate for new pensions (% per annum)	10.8	14.5	18.1
Number of new pensions awarded (% of resident population reaching normal retirement age)	105	100	95

The following chart shows the combined AOV-AWW PAYG cost rates through 2062.

Chart 7. Projected combined AOV and AWW PAY cost rates under 3 projection scenarios
(% of insurable earnings)



At the end of 2002, there were approximately 10,000 AOV and 1,600 AW pensions in payment. The number of projected pensions under each of the three scenarios for both schemes is shown for selected years in the following table. It should be noted that a married pension is counted as one pension.

Table 9. Projected number of AOV and AWW pensions under *status quo* provisions, 2012 to 2062

Year	AOV			AWW		
	Pessimistic	Intermediate	Optimistic	Pessimistic	Intermediate	Optimistic
2012	16,189	15,812	15,392	1,826	1,841	1,858
2022	25,795	25,003	24,109	1,475	1,542	1,619
2032	32,088	31,455	31,290	1,192	1,374	1,576
2042	29,957	31,453	33,409	1,212	1,479	1,763
2052	28,615	32,398	36,457	1,167	1,461	1,774
2062	29,075	33,988	39,044	1,056	1,433	1,847

Another measure used to estimate the long-term cost of a social security system is the general average premium, which represents the average level contribution rate required over the next 60 years to fully cover total expenditure during that period. This rate may be looked at as the single-rate long-term cost of the benefits package. While this rate is more commonly used for funded pension systems it can be quite useful for assessing the long-term cost differences between projection scenarios that have slightly different assumptions. The following table summarises the General average premium for the three projection sets and the pay-as-you-go rates for each in select future years. As expected, the optimistic scenario has the lowest General average premium and pay-as-you-go rates and the pessimistic scenario the highest.

Table 10. Projected GAP (60-year) and PAYG cost rates (% of insurable earnings)

Scenarios	GAP	PAYG cost rates		
		2002	2032	2062
Pessimistic	28.5	13.2	37.1	40.2
Intermediate	22.7	13.2	27.4	27.9
Optimistic	18.3	13.2	21.1	19.6

The cost of pensions over time may be expressed in terms of the shortfall in contribution rate over the next 60 years as a percentage of insurable earnings and GDP as presented in the table below. The insufficiency of the current contribution rate to meet future expenditure becomes obvious. The same shortfall can be expressed in relation to GDP to provide a macro-economic appreciation. To arrive at the determination of the contribution shortfall, the components of the simplified actuarial balance sheet are calculated as shown in Table 11.

Table 11. Simplified actuarial balance sheet (billion Afl's)

	Pessimistic	Intermediate	Optimistic
+ Present value of future contribution income (13.5% of insurable earnings)	5.9	7.3	8.9
- Present value of future benefit expenditure	12.5	12.3	12.1
= Present value of shortfall in contribution income	(6.6)	(5.0)	(3.2)
– as percentage of insurable earnings	15.0	9.2	4.8
– as percentage of GDP	196	148	95

Under each scenario, the current 13.5 per cent contribution rate will be insufficient to meet combined AOV-AWW expenditure for the next 60 years. When expressed as a percentage of insurable earnings, the shortfall in the contribution rate indicates the required increase to the present contribution rate over the next 60 years. For example, under the intermediate scenario, a rate of 22.7 per cent (13.5 per cent + 9.2 per cent) would be required. It should be noted that if the contribution rate were increased to 22.7 per cent the financing method of the AOV and AWW schemes would essentially change from the PAYG financing method to a partially-funded approach where contributions collected in excess of expenditure in early years would be invested in the form of a reserves (representing a liability of the system) and later used to meet growing expenditure levels when the annual benefit outgo will be higher than contribution income (assuming no change in contribution rate over the period).[5] From an economic perspective, the contribution shortfall lies within the range of 1- to 2-times nominal GDP in today's terms.

[5] Vide discussion in section 4.9.

4. Review of parametric reforms and other considerations

The projection results discussed in the previous chapter suggest that the current combined AOV-AWW contribution rate of 13.5 per cent will have to almost double for Aruba's pay-as-you-go national pension systems to continue meeting the promises that are now being made to current workers. The main reason for this is the gradual ageing of the population that will result in the number of persons contributing to the AOV-AWW schemes decreasing relative to the number of pensioners. As a result, the demographic ratio will increase. [6]

Over the past two decades, Aruba experienced major population, economic and social changes. Between 1991 and 2000 the population grew by over 35 per cent and the proportion of the non-Aruban population increased from 24 per cent to 34 per cent. This influx of immigrants, most of who joined the workforce and paid AOV-AWW contributions, positively benefited the pension schemes' finances. However, such a dramatic change in population characteristics, along with labour market changes where a larger portion of the population is self-employed, provides justification for a review of the current pension structure to verify it is still consistent with current socio-economic conditions, social policy and it is affordable.

The cost of providing pensions to all of the resident elderly, as well as those who once resided in Aruba, under the current rules will increase to over 25 per cent of insurable earnings within the next 30 years. This rate may appear excessive in today's context but such contribution levels already exist in several European countries where ageing has been well underway and measures taken to face the impact on their social security systems. While the most direct way of reducing the long-term cost of a pension system is through deliberate changes to the pension system, high economic growth and improved labour productivity will positively impact the cost of providing universal pension coverage.

Specific reforms of the parameters of the pension system aimed at reducing the future financing gap may be achieved by taking measures that either increase revenue or decrease expenditure. The most direct way of enhancing revenue would be to increase the contribution rate. Also, since there is no link between personal contributions and pensions, expanding the earnings base either by increasing the ceiling or improving compliance would increase revenue without any direct increase in future pensions. Meantime, individualizing pensions would produce a positive net impact on finances as couples now pay only one full contribution, but receive 1.68times the single pension.

Since administrative expenditure consumes a very small portion of contributions, savings on the expenditure side will have to come from pension payments. Examples of measures that may achieve such savings include establishing minimum residency and/or contribution requirements, increasing the retirement age and means-testing pensions up to a certain age.

The issue of national pension reform is topical throughout the world with countries taking different approaches to securing the viability of their programmes. Some countries have suspended their traditional state-run defined benefit schemes and opted for defined contribution, privately managed schemes. Others have kept the traditional defined benefit

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[6] Vide section 3.1.

approach and have made reforms that reduce long-term costs. A few others have chosen multi-pillar approaches or hybrid systems that combine defined contribution and defined benefit, public and private management as well as funded and unfunded tiers. The preferred option depends heavily on the history of the scheme, the country's socio-economic conditions, the current and projected financial state of the scheme, the development of domestic capital markets, and the philosophy of the Government and people.

In its present form, the insurance concept found in the AOV and AWW pension schemes is determined solely by residency with the main characteristics of the AOV scheme summarised as follows:

- everyone who has ever lived in Aruba between 15 and 60 qualifies – i.e. eligibility not based on contributions;
- everyone with the same number of years of residency gets the same pension – i.e. pension amount not based on income;
- married persons living together get a combined pension that is more than a single pension but less than 2 times the single rate yet need to pay only one full contribution (on insurable earnings up to the ceiling),
- persons over normal retirement age who live abroad but who at some time between ages 15 and 60 lived in Aruba qualify for a lifetime pension.

By design, the AOV system is highly re-distributive (all income levels receive the same pension for the same years of residency) and based on a principle of social solidarity where the pension amount is based on presumed need (everyone gets it) with two people living together getting less than twice the single rate to be maintained. Survivor pensions under the AWW scheme, meantime, are only paid if the deceased was insured (living in Aruba) at the time of death. Therefore, residency and possibly contributions for many years do not secure a pension for dependants should the person leave Aruba and subsequently die.

While the present systems may have several weaknesses, the main one being the non-implementation of discounting pensions for non-payment of contributions, there appears to be no need for Aruba to radically change its present residency-based, pay-as-you-go financed pension systems. However, no option for reform should be excluded without appropriate research and extensive consultation.

The following sections provide a discussion of several policy issues that were either raised by stakeholders or noted by the Actuary during his visit to Aruba. Where applicable, the cost implications of these changes have been presented.

4.1. Discrepancies between legal provisions and current practice

It was reported that some regulations of the AOV and AWW Ordinances have either never been implemented or are not currently being followed. There are also several practices that have not been formalised and placed into the text of the Ordinances.

The main regulations observed as not being followed and accompanying explanations include:

- regulations stipulate that discounts of 3 per cent should apply for each annual contribution payment missed and where the pensioner is negligibly at fault for not

having paid his contributions in the past. This regulation cannot be observed because of the lack of individual records on contributions collected through the Tax Office. The practice results solely in discounts based only on recorded years away from Aruba,

- regulations call for annual indexation of pensions in payment. It is observed in the past that no adjustments have been made since 1998.

The main current practices that are not done in conformity with the Ordinances include:

- equal treatment of men and women for the payment of married pensions under AOV and survivors' pensions under the AWW scheme,

- payment of a Christmas bonus to AWW beneficiaries on a similar basis as the one paid to AOV pensioners.

The Government and the SVB are encouraged to review these policies and decide whether or not changes to the Ordinances are required so that all regulations are followed and current practices are in conformity with appropriate legislation.

4.2. Indexation of pensions and ceiling

The AOV law provides for annual indexation of pensions in line with price increases. Since 1998, however, pensions have not been adjusted. For the projections presented in the previous chapter, it was assumed that annual indexation of pensions in line with wage increases will commence in 2004. The rationale for assuming adjustments in line with wages as opposed to price increases is based on the assumption that wages will increase at a faster rate than prices, and if price inflation were the base, then each year the pension rate would become less and less relevant.

There are two schools of thought on how pensions should be increased – in line with wage increases or in line with price increases. Historically, wage growth has exceeded price inflation (i.e. there has been positive real wage growth) and thus if pensions are adjusted to changes in wages then pensioners will get larger increases and enjoy the same improvements in standard of living as workers do. Should pensions be adjusted by prices inflation, they will be able to maintain the same standard of living that they had when the pension was first awarded.

When assuming AOV/AW pensions are adjusted annually in line with price increases, projections of individual pensions and resulting PAYG cost rates appear lower. Since the initial pension is not tied to a basis related to insurable earnings before retirement, the replacement rate should decline overtime and the GAP is estimated to be lower at 15.9 of insurable earnings (as opposed to 22.7 per cent).[7]

The following chart shows the projected PAYG cost rates for the intermediate scenario, one with wage-related pension adjustments and the other with price-related adjustments.

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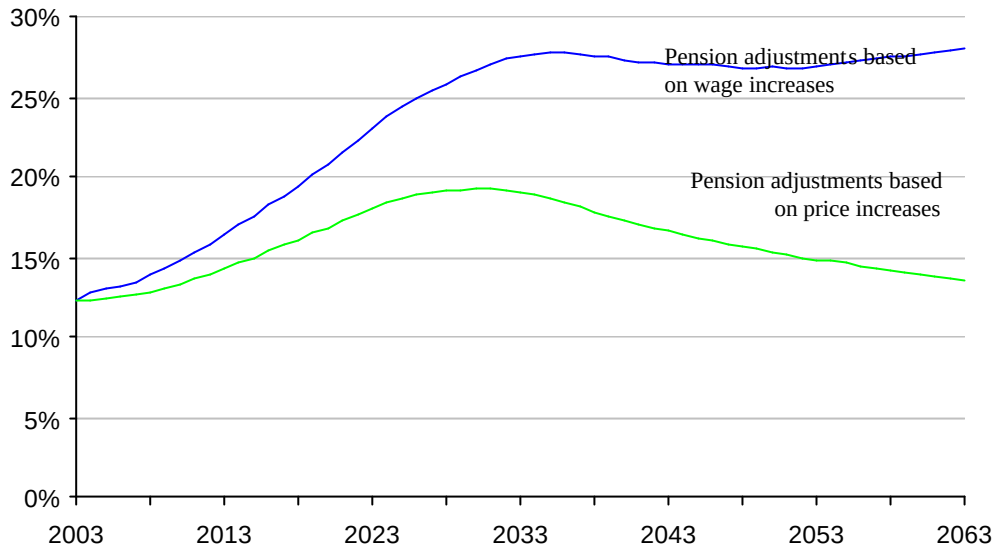
[7] Under the intermediate scenario, productivity increases or increases in real wages are assumed at 1.25 per cent p.a.

Chart 8. Projected PAYG cost rates according to different pension indexation basis (wage–related and price-related), 2002 to 2062



Given that pension adjustments based on price increases will likely make AOV pensions less relevant in relation to insurable earnings over time, annual adjustments based on an index relating to average increases in wages are recommended. This would require either (a) the creation of a national wage index under the control of the CBS, or (b) the publication of an SVB-specific index of insurable wages used for the AZ/OZ contributions. The main downsides to an SVB-specific index relate to: only insurable wages up to the set ceiling would be taken into account and not reflecting actual changes in total compensation; only wages submitted to contribution collection would be accounted for; and the wages of government employees representing more than 10 per cent of the workforce would be excluded.

As an alternative to annual pension increases, it has been suggested that the basic pension rate (now Afl 900) be tied to the minimum wage. With the minimum wage currently at Afl 1,200 per month, the maximum single pension is 75 per cent of the minimum wage. The ILO supports this alternative to annual automatic increases, once the minimum wage is adjusted at least every 3 years and the adjustments are tied to actual increases in general wages. Therefore, the creation of a national wage index would also be required if this method of adjusting pensions is adopted.

For the ceiling on insurable earnings, the ordinance does not stipulate that annual adjustments should take place. However, there has been a practice of annual increases, although none has occurred since 1998. Similar to the manner recommended for pensions, it is recommended that the ceiling be adjusted annually in line with changes in average wages, and that the rules governing such an increase be placed in the Ordinance.

4.3. Increasing normal retirement age

When the AOV was established in 1966, the normal retirement age was 65. It was then decreased to 62 in 1975 and lowered again to 60 in 1992. Over the past 40 years, however, the overall health of the working-elderly has improved and life expectancy has increased.

Also, people now enter the workforce later than they did in prior decades as many now attend tertiary level institutions, thus reducing the number of years in the workforce.

In Aruba the retirement age for government employees is 60 but there is no general forced retirement age in the private sector. There is however concern that since the AOV pension is payable at age 60, many employers let their workers go when they attain age 60. On the other hand, many people remain employed beyond age 60 and thus receive their wages as well as the AOV pension.

From the perspective of the AOV scheme as a whole, increasing the normal retirement age implies the payment of benefits for a shorter period to each insured member. It may also be argued there is a positive impact on contribution income should be collected on average by the scheme for an additional number of years. However, since extended employment by the elderly may simply limit opportunities for the young, this positive impact on contribution income may be minimal and also in view of individual pensions not being tied to personal records of contributions. The macro-economic issue of youth unemployment needs to be taken into account as well. Strictly from the point of view of the AOV scheme, an increase in the normal retirement age is recommended in order to reduce long-term expenditure whilst reflecting improvements in living conditions allowing a longer life.

To estimate the financial effect of increasing the normal retirement age two schedules of normal retirement age increases have been modelled. The first scenario assumes the normal retirement age increasing from 60 to 62 over a 6-year period, through one-third-of-a-year increases in normal retirement age for each calendar year. The second scenario assumes the normal retirement age increases to 65 over 15 years through one-third-of-a-year increases in normal retirement age for each calendar year. The financial impact of these changes is shown in the following table.

Table 12. Financial implications of increasing the normal retirement age to 62 and 65
(% of insurable earnings)

	GAP	PAYG cost rates	
		2032	2062
Intermediate scenario - *Status quo* provisions	22.7	27.4	27.9
Normal retirement age increased to 62 over 6 years	20.1	24.4	25.3
Normal retirement age increased to 65 over 15 years	17.6	20.9	22.0

The two schedules of age increases presented above are only two of many possible reasonable methods of reaching a higher age. If the new normal retirement age is reached more quickly, the savings would be slightly higher but many persons who miss the original normal retirement age by a few months may have to wait several years to qualify under the new normal retirement age.

A reform scenario whereby the normal retirement age is increased to 62 but no contributions would be payable once age 60 is reached has been recently suggested. This change would have the effect of deferring the start of the pension by two years and thus reduce pension expenses. Unlike the reform scenario discussed above where the normal retirement age is increased to 62 and contributions are payable up to the normal retirement age, this change may have a negative impact on contribution income. The reduction in long-term costs would be lesser than under a simple increase in normal retirement age to 62 (GAP estimated at 20.6 per cent of insurable earnings).

4.4. Minimum qualifying conditions for the AOV pension

Under present rules, there is no minimum residency criterion to qualify for the lifetime AOV pension. However, since the pension amount is directly related to the number of insured years and there is no minimum pension, each pensioner receives an amount discounted for the number of non-insured years. This means that someone with only 1 year of residency will receive a monthly pension of Afl 20 (1/45 x Afl 900).

If a 10-year residency requirement were introduced fewer persons would qualify for pensions such that the financial costs to the scheme would reduce over time. To estimate the financial effect of such a modification to the eligibility conditions, a reform scenario was assumed on the basis that the number of qualified AOV pensioners at the time reaching the normal retirement age would be reduced by 10 per cent compared to the situation under *status quo* benefit eligibility conditions. This is an arbitrary assumption given the limited information available and results should only be used for illustrative purposes. Under such a reform scenario for stricter residency eligibility conditions, the GAP is reduced from 22.7 per cent (*status quo* provisions under intermediate scenario) to 20.8 per cent of insurable earnings whilst PAYG cost rates would also be lower by 2 per cent approximately in the long run.

While nationality cannot be used as a basis for denying the pension, a minimum residency requirement for persons who do not live in Aruba after reaching normal retirement age may be considered. Such a requirement will introduce place of residency after becoming pensionable and years insured as conditions of continued payment. For example, the rules may say that all elderly Aruba residents who were insured at some time will receive a pension while elderly persons who no longer live in Aruba must have had a minimum residency period of say 10 years to qualify. While this change will mainly affect migrants who moved to Aruba for a short time but did not retire there, it is consistent with a residency-based system that pays a pension based on years of residency and not contributions.

4.5. Payment of individual pensions only

The provisions surrounding the payment of single and married AOV pensions appear to impact the behaviour of some insured persons nearing normal retirement age. For example, a couple living together may separate just before the younger partner turns 60 so that two single pensions may be payable (a total of Afl. 1,800) instead of the married pension (Afl. 1,516). Also, someone nearing 60 may choose to live with a younger partner so that the married pension is payable instead of the single pension.

On the contribution side, only one full contribution is required from a couple. That is, once combined contributions exceed what would be payable by one person with earnings at the ceiling, the excess is refunded (commonly called restitution). Therefore, if this couple remains married, only one full contribution is received but a pension of 1.68 times the single rate is paid. Should they separate just before retiring, two separate pensions would be paid but only one contribution would have been received.

A well-designed pension system should limit the scope for differences in pension status (eligibility or rate of payment) based on deliberate behavioural decisions of insured persons. The SVB may wish to review the payment of its married pension given the increased prevalence of divorce, the non-factoring of the age and/or income of the younger spouse and the practice of restitution even though two single pensions may be eventually paid.

Without individual records, it is not possible to clearly state that the payment of individual contributions that result in individual single pensions would cost less than the payment of a married pension of 1.68 times the single rate, with restitution payments where applicable. The uncertainty here is linked to fact that lower income couples will pay two full contributions that together do not reach the maximum for a single person. This reform scenario raises an issue of inequity in the current system that allows higher income couples to pay one contribution while lower income couples may have to pay two full contributions. While the amounts paid in florins are higher for the higher income couple, the re-distributive principle on which AOV pensions are based does not exist to the same extent.

The elimination of the married pension and the individualisation of both contributions and pensions should be considered, and if phased out, should occur gradually, say over at least 10 years. This will allow couples that received refunds of excess contributions to not get two full pensions for only one full contribution. If, however, the married pension is maintained, the full married rate should be discounted depending on the income level and age of the younger spouse, as is the practice in The Netherlands. Also, the practice of restitution should be eliminated.

4.6. Linking pension formula to contribution record

Insured status under the AOV and AWW schemes is based on residency only. Persons who have lived in Aruba and who are of any nationality will receive a pension upon attaining normal retirement age irrespective of having worked or not throughout their working life and having paid or not contributions to AOV and AWW. The level of acceptance for such a system based on solidarity between generations seems high but there appears to be growing concern that those who did contribute should be rewarded in some manner in addition to the escalating cost of the system in the future. As the proportion of self-employed persons in the workforce increases, it is recommended that reductions to pensions be enforced as required in Section 8 of the AOV Ordinance to account for years where no contribution has been paid.

The current method used to collect contributions through the Tax Office does not allow for this benefit reduction to be enforced in practice. This is an additional argument to request that the Tax Office maintains individual records. The Government should work with the SVB to review the costs and benefits of changing the system of collection. It should include the alternative for the SVB to directly collect AOV-AWW contributions in the same way as is done for the Accident and Sickness scheme administered by the SVB.

Given that the individual pension amount is not linked to actual earnings nor the number of years of contributions paid, the additional resources and expense associated with complete contribution data may not be warranted. The Government should consider issuing annual certificates by the Tax Office indicating contributions paid during the particular fiscal year. For those who genuinely are not employed, they too can be issued certificates indicating that they were exempt from contributions. These certificates could be coordinated with the SVB so that upon retirement, the number of eligible years is easily verifiable and the correct pension amounts are calculated. In all cases, closer institutional collaboration between the SVB and the Tax Office is absolutely necessary in future for a more effective governance of the social security system of Aruba.

4.7. Increasing the insurable earnings base

AOV-AWW contributions are based on earnings up to a ceiling, now Afl. 4,108 per month, approximately 1.7 times the average insurable wage[8]. Among non-government employees who pay contributions to ZV/OV, just over 10 per cent have earnings at or above this ceiling. Unlike ZV/OV contributions that are collected by SVB, the Tax Office collects AOV-AWW contributions and hands them over to SVB. Since no individual records are kept, it is not possible to know the actual level of compliance and earnings on insured persons paying contributions. It is also not possible to know with complete certainty whether or not the amount actually collected in AOV-AWW contributions is the amount transferred to the SVB.

Over the past few years, the AOV contribution rate of 11.5 per cent of insurable earnings translated to around 4.1 per cent of nominal GDP (official figures). This means that the wage base on which contributions are being collected is around 31 per cent of GDP. While national GDP estimates are not prepared on the income approach, personal consumption derived from the expenditure approach has been estimated at 56 per cent of GDP. Therefore, total wages in the economy of GDP should be close to this level.[9]

There are two main reasons why the AOV-AWW wage base will be smaller than total wages - only earnings up to the ceiling are counted and non-compliance. Among the self-employed especially, compliance rates are very low. Using the 2002 AOV benefit PAYG rate and separating it into two main components – demographic ratio times replacement ratio - the overall level of non-compliance has been estimated. The PAYG rate was 12.0 per cent and the replacement ratio was 31 per cent. By deduction, therefore, the demographic ratio is 39 per cent. With 14,161 pensioners[10] in 2002, the number of contributors can be estimated at 36,300. Compared with the estimated 41,000 employed persons, this represents an overall compliance level of around 88 per cent.

While slightly at the low end, the ceiling is presently at an acceptable level of 1.7 times average insurable wage. However, if there is a desire to increase the re-distributive effect of the pensions system (higher income people contribute more but get the same pension) the ceiling may be increased to around 2.5 times average insurable earnings. With respect to increasing compliance, this usually requires stricter enforcement of the law. Under the current system, such enforcement rests with the Tax Office.

For the AOV-AWW projections performed for this report, contributions have been assumed to be 4.1 per cent of GDP. If through various measures (increased ceiling and/or better compliance) the wage base could be increased by 15 per cent, the same amount of contributions could be collected with a rate of 10 per cent of insurable earnings as insurable earnings would now be 41 per cent of GDP. With the insured base increased by 15 per cent, the General average premium would fall by 3 per cent to 19.7 per cent.

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[8] Average taken from ZV/OV contribution records, which do not include Government workers.

[9] In the EU, private consumption is 58 per cent of GDP while compensation to employees (excluding earnings of the self-employed) is 51 per cent of GDP.

[10] Married pension counted as two persons.

4.8 Lower Married Pension Rate and Christmas Bonus

In the comparison of the Aruban AOV pension and the parallel scheme in the Netherlands in Chapter 1, it was noted that the married pension rate was 1.37 times the single rate in The Netherlands and 1.68 times the single rate in Aruba. It was also shown that the Christmas bonus is much higher in Aruba – 75 per cent of a month's pension compared with 5 per cent in The Netherlands.

For the purpose of reducing long-term costs, consideration could be given to reducing either or both of the married pension rate and the Christmas bonus. If the married rate is reduced to 1.5 times the single rate, the General average premium would fall to 21.7 per cent. If the Christmas Bonus was reduced from 75 per cent to 40 per cent of a month's pension then the General average premium would be 22.1 per cent. If both factors were reduced to the levels indicated above, the General average premium would be 21.1 per cent.

The following table summarises the results of each of the different policy options discussed above.

Table 13. Projected GAP (60-year) and PAYG cost rates according to possible parametric reforms
(% of insurable earnings)

Scenarios	GAP	PAYG cost rates	
		2032	2062
Intermediate scenario - *Status quo* provisions	22.7	27.4	27. 9
Pension increases based on price inflation	15.9	18.7	13.3
Normal retirement age increased to 65 over 15 years	17.6	20.9	22.0
Normal retirement age increased to 62 over 6 years	20.1	24.4	25.3
Normal retirement age increased to 62 over 6 years with no contributions if working at ages 60 and 61	20.6	24.7	25.2
Enforce discount for non-payment of contributions	21.6	25.9	26.0
10-year residency qualifying condition	20.8	24.7	25.2
15% increase in wage base	19.7	23.8	24.3
Increase normal retirement age to 65 and 15% increase in wage base	15.0	17.9	19.4
Married pension of 1.5 times single pension	21.7	26.2	26.7
Christmas bonus of 40% of a month's pension	22.1	26.6	27.1
Lower married pension & lower Christmas bonus	21.1	25.5	26.0

Note: The specific assumptions mentioned in the relevant section are an important determinant of the cost differences noted above.

4.9. Funding objective

Since inception, the AOV and AWW schemes have been financed on a PAYG basis. For the AWW scheme, costs as percentage of insurable earnings are not expected to be any higher than they are today. For the AOV scheme projections indicate that future PAYG cost rates could reach 26 per cent of insurable earnings.

One financing method of avoiding such high rates in the future would be to foresee progressive increases in the contribution rate so that a reserve could accumulate through

collected annual contribution income in excess of expenditure for the same year. These reserves could then be invested both locally and abroad, and together with investment returns, serve to meet benefit expenditure in the future such that the ultimate level of the contribution rate could remain at a lower level. Given the maturity of the public pension system in Aruba, this ultimate level is only affected by the demographic ageing of the population.

While pre-funding part of future expenditure has the advantage of lower ultimate future contribution rates, suitable investment opportunities with adequate real rates of return, as well as prudent and responsible management of the fund are essential.

If pre-funding is selected for AOV and AWW pensions, a specific funding objective should be established and an initial increase to the contribution rate made. Further increases to the contribution rate could already be planned such that the long-term financial viability of the scheme over the next 60 years or so is guaranteed. This may be important to the younger generations who will have to pay more and more contributions and would feel that the burden of ageing is shared with the older age groups in the working population of today and in the medium term.

The funding objective may be to move to a reserve level of say 4 times combined annual expenditure after 30 years, and then allow the funding level to slowly decrease to 2 times during the next 30 year period. The actuary could propose a schedule of contribution rate increases to meet this financing requirement as set in the funding objective of the scheme. Thereafter, as part of regular actuarial reviews that should be undertaken at least every three years, an assessment of whether or not the set schedule of contribution rates continues to meet the long-term funding rule should be made. If changes are considered necessary, the actuary should recommend a revised schedule of rate adjustments.

Reasonable schedules of contribution rate increases permitting to satisfy the funding objective outlined above for *status quo* provisions (intermediate scenario) could be expressed as increasing the contribution rate by 2 per cent every other year beginning in 2005 to reach an ultimate contribution rate of 25 per cent in 2015. Under the optimistic scenario, it could be foreseen increasing the contribution rate by 1 per cent each year beginning in 2005 to reach an ultimate contribution rate of 19.5 per cent in 2010. Under the pessimistic scenario, the schedule of contribution rates could foresee increasing by 2 per cent each year beginning in 2005 to reach an ultimate contribution rate of 32.5 per cent in 2015.

The benefits of adopting a higher level of pre-funding may need to be weighted as they may not be significant enough. The main advantage to advanced funding may lie in the stability of contribution rates over time compared with PAYG cost rates that may be increasing more steeply.

Annex 1. Summary of financing and benefit provisions

Aruba has two national pension systems – the General Old Age Pension Scheme (AOV) that provides a basic pension for everyone who has lived or worked in Aruba upon attaining normal retirement age and the General Widows and Orphans Insurance Scheme (AWW) that provides entitlements to the survivors of an insured deceased. Both schemes are financed on a pay-you-go-basis.

In general, persons who reside in Aruba, irrespective of their nationality or whether or not they receive income, are insured. The maximum insurance period is 45 years, beginning at age 15 and ending at age 60.

A1.1. Financing provisions

Every working person in Aruba (employed and self-employed) is obliged to pay contributions to both schemes on their earnings up to the earnings ceiling. The ceiling is presently Afl. 4,108 per month and was last increased from Afl. 3,997.50 in 1998. Contributions are shared by the employer and employee as shown in the following table:

Table 14. AOV and AWW contribution rates (% of insurable earnings)

	Employer	Employee	Total
AOV scheme	8.5	3.0	11.5
AWW scheme	1.0	1.0	2.0
Total	9.5	4.0	13.5

The only contribution rate increase since 1960 took place in 1994 when the combined AOV-AWW insurance was raised from 9.5 per cent to 13.5 per cent.

For couples, only one full contribution is required. Therefore, where both spouses work and have contributions deducted, contributions made that relate to combined earnings above the ceiling are refunded.

The Government's Tax Office that is responsible for the collection of income taxes also collects AOV-AWW contributions. Since no individual records of AOV-AWW contributions are kept by that office funds are transferred to the SVB en masse, without any indication of who contributed, how much was contributed and for what period the contributions relate.

A1.2. AOV pension provisions

For someone insured (resident in Aruba) every year during the 45 years between their 15th and 60th birthdays, a full AOV pension is payable. The normal retirement age of 60 applies of both men and women. For each non-insured year, the full AOV pension is discounted by 2.22 per cent (1/45). While the law provides for a 3 per cent discount for each year a resident failed to pay contributions due to his/her own negligence, this is not enforced as individual contribution records are not maintained. The full pension for a single person is

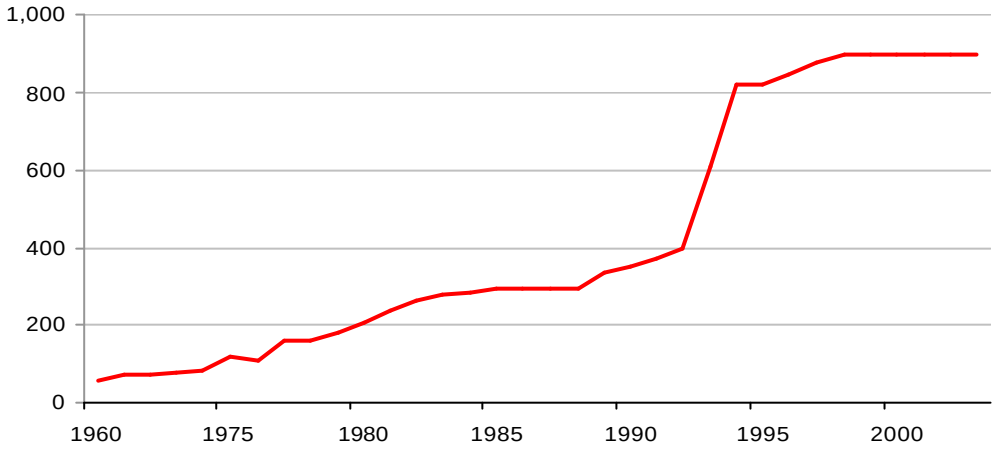
Afl. 900 per month. The pension is payable without a requirement of being retired, living in Aruba or level of income, and is payable until death.

For a couple (not necessarily married) that lives together, the pension is payable when the older of the two reaches his/her age 60. The married pension rate is Afl. 1,516 and is the same regardless of the age and/or income of the younger spouse. Following the death of one spouse, the surviving spouse will receive the single pension with the appropriate deductions made for non-insured years.

In addition to the regular pensions, a Christmas bonus of 75 per cent of the monthly pension is paid each December.

While the AOV law stipulates that pensions should be indexed annually, no adjustments have been made since January 1998. Prior to this, adjustments were made each year with the exception of 1986 and 1987. The following chart illustrates increases in the flat-rate single pension between 1960 and 2002.

Chart 9. Past adjustments of single AOV pensions, 1960 to 2002



A1.3. AWW pension provisions

Under the AWW scheme, insurance is also based on being resident in Aruba.

The same pension provisions apply to widows and widowers with the monthly pension based on the age of the survivor (widow, widower or orphan) not on years of residency. For an AWW pension to be payable, the deceased must have been insured (living in Aruba) when he/she died. Also, the widow(er) must be younger than 60 years old and the amount received will depend on whether or not the surviving spouse has children and/or is handicapped.

Upon remarriage, the AWW pension benefit ceases. When the widow(er) attains normal retirement age (now 60) the widow(er)s pension is automatically transformed into an Old Age (AOV) pension.

The orphan's pension is also based on the age of the child. Payment is made up to age 14, but is extended up to age 24 if the child remains in full-time education. The pension payable to a "full orphan" – someone whose both parents are deceased – is higher than that of a half orphan.

The following table shows current monthly amounts paid to orphans and widow(er)s. These rates were last adjusted in January 1998.

Table 15. Monthly pension rate for widow(er)s' and orphans' pensions

Age	Widow(er)s
Up to 39	405
40 to 48	543
49 to 57	688
58 to 60	900

Age	Half Orphans	Full Orphans
0 to 9	298	320
10 to 14	320	351
15 to 24	351	405

Note: Also applies to disabled/handicapped widow(er)s and widow(er)s that have children

A Christmas bonus of 75 per cent of a month's pension is paid each December. This provision is not found in law but is practiced in a similar manner as is the bonus for AOV pensioners.

Annex 2. Methodology, data and assumptions

This actuarial review makes use of the comprehensive methodology developed at the Financial and Actuarial Service of the ILO (ILO FACTS) for reviewing the long-term actuarial and financial status of a national pension scheme. The review has been undertaken by modifying the generic version of the ILO modelling tools and the creation of a residency-based pension projection model to fit the specific case of Aruba and the pension schemes administered by the Social Security (Insurance) Bank of Aruba (SVB).

The actuarial valuation begins with a projection of Aruba's future demographic and economic environment. Next, projection factors specifically related to the General Old Age Pension Scheme (AOV) and the General Widows and Orphans Insurance Scheme (AWW) are determined and used in combination with the demographic/economic framework to estimate future cash flows. Assumption selection takes into account both recent experience and future expectations, with emphasis placed on long-term trends rather than giving undue weight to recent experience.

A2.1. Modelling demographic and economic developments

Aruba's population has been projected beginning with results of the 2000 national census and applying appropriate mortality, fertility and migration assumptions. For the intermediate scenario the total fertility rate is assumed to remain constant at 1.86 throughout the projection period. Table 16 shows current and ultimate age-specific and total fertility rates. For the pessimistic and optimistic scenarios, the ultimate total fertility rates are assumed reached in 2021.

Table 16. Total fertility rates, 2002 to ultimate year of projections

Age Group	2002	Ultimate Rates		
		Optimistic	Intermediate	Pessimistic
15 - 19	0.055	0.027	0.025	0.023
20 - 24	0.101	0.068	0.063	0.058
25 - 29	0.110	0.108	0.100	0.092
30 - 34	0.067	0.099	0.092	0.084
35 - 39	0.037	0.085	0.079	0.072
40 - 44	0.007	0.017	0.016	0.015
45 - 49	-	-	-	-
TFR	**1.86**	**2.00**	**1.85**	**1.70**

Mortality rates have been determined with the methodology used for the development of the United Nations model. This methodology uses as a base the life expectancy at birth in 2000 of 70 and 76 for males and females, respectively. Improvements in life expectancy have been assumed to follow the "slow", "medium" and "fast" rates as established by the United Nations for the pessimistic, intermediate and optimistic scenarios respectively.

Sample mortality rates for sample years under the "medium" rate of mortality improvements are provided in Table 17. It is noted that the CBS produces its own mortality table by 10-year age groups.[11]

Table 17. Mortality rates, intermediate scenario (medium rates for mortality improvement)

Age	Males			Females		
	2002	2032	2062	2002	2032	2062
0	0.0105	0.0043	0.0040	0.0064	0.0039	0.0030
5	0.0006	0.0002	0.0001	0.0003	0.0002	0.0000
15	0.0004	0.0003	0.0001	0.0003	0.0001	0.0001
25	0.0008	0.0010	0.0007	0.0004	0.0003	0.0003
35	0.0012	0.0009	0.0007	0.0007	0.0005	0.0004
45	0.0025	0.0020	0.0017	0.0017	0.0012	0.0008
55	0.0063	0.0056	0.0046	0.0040	0.0028	0.0021
65	0.0167	0.0135	0.0105	0.0098	0.0065	0.0044
75	0.0438	0.0387	0.0305	0.0312	0.0212	0.0150
85	0.1100	0.1174	0.0973	0.1038	0.0830	0.0676
95	0.2498	0.2759	0.2509	0.2614	0.2350	0.2151

Net migration (in minus out) for each scenario is assumed to decline over the projection period at varying rates and reaching different ultimate levels, except for the pessimistic scenario where zero net migration was assumed for all years. The following table shows the age distribution of net migrants for the first projection year and the ultimate levels (2042 and beyond) for each of the three scenarios. In each case, females are assumed to represent 57 per cent of migrants.

Table 18. Net immigration

Age	Pessimistic		Intermediate		Optimistic	
	2003	2021	2003	2011	2003	2021
0 - 9	-	-	25	17	59	34
10 - 19	-	-	28	19	66	38
20 - 29	-	-	161	107	376	215
30 - 39	-	-	75	50	174	100
40 - 49	-	-	13	9	31	18
50 - 59	-	-	(0)	(0)	(0)	(0)
60 - 69	-	-	(2)	(1)	(4)	(2)
70+	-	-	(1)	(1)	(3)	(2)
All Ages	**-**	**-**	**300**	**200**	**700**	**400**

[11] Vide Central Bureau of Statistics (2002): *People of Aruba: Continuity and Change*.

The projection of the labour force, i.e. the number of people available for work, is obtained by applying assumed labour force participation rates to the projected number of persons in the total population. Labour force participation rates have been estimated on the basis of views collected from CBS specialists (c.f. publication "Current Developments of Aruba's Labour Market", May 2003) and adjusted to account for possible lower labour force participation rates affecting the AOV and AWW membership. Between 2002 and 2032, age-specific labour force participation rates are assumed to increase at advanced ages for both males and females. Minor increases have also been assumed for females in all age groups to account for their expected larger entry into the labour force. The table below shows the assumed age-specific labour force participation rates in 2002 and 2062. Between these two years, rates are assumed to change linearly.

Table 19. Age-specific and total labour force participation rates

Age	Males		Females	
	2002	2062	2002	2062
17	24%	24%	20%	21%
22	71%	71%	67%	69%
27	90%	90%	78%	80%
32	91%	91%	80%	82%
37	91%	91%	79%	81%
42	87%	87%	76%	78%
47	86%	86%	72%	74%
52	84%	86%	59%	71%
57	71%	84%	42%	58%

Year	Males	Females
2002	73%	60%
2012	72%	59%
2022	73%	59%
2032	74%	61%
2042	75%	62%
2052	74%	61%
2062	74%	61%

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

Estimates of increases in the total wages are required since contributions have been assumed to be a fixed percentage of nominal GDP. It is reminded that there is no data available on individual wages due to the contribution collection through the Tax Office. Annual average real wage increases are assumed equal to the increase in labour productivity, as it is expected that wages will adjust to efficiency levels over time. The inflation assumption affects nominal average wage increases.

A2.2. Projection of AOV expenditure

The projections of AOV pensions are performed following a year-by-year cohort methodology with the only contingency being death. For each year up to 2062, the number of pensioners and the average pension for each age, is estimated. The actual average discount rate for each initial pension-age cohort is maintained as age increases. Therefore, discount rates have only been assumed for new pensioners, who are all assumed to join at the normal retirement age, now 60.

The following table provides a summary of the number of pensions in payment and the average pension at the end of April 2003.

Table 20. AOV pensions-in-payment, April 2003

Age	Married		Single		Split	
	Male	Female	Male	Female	Male	Female
60 - 64	731	150	463	805	256	215
65 - 69	841	68	419	959	190	234
70 - 74	676	16	343	824	69	101
75 - 79	384	3	211	603	50	32
80 - 84	225	-	170	466	20	18
85 - 89	77	2	102	349	10	7
90 - 94	26	-	38	158	7	3
95 - 100	5	-	12	47	-	1
# of Pensioners	**2,965**	**239**	**1,758**	**4,211**	**602**	**611**
Avg Monthly Pension (Afl's)	**1,314**	**1,332**	**768**	**778**	**687**	**680**

For new pensions, assumptions have been made as to the type of pension (married, single or split), the proportion that each makes up, and the average discount rate for each pension type for each of the three projection scenarios. The following two tables show the assumed distribution of new pensions by type of pension and the average discount rates assumed for males and females, for each of the three scenarios.

Table 21. Distribution of new AOV pensions

Type of pension	Male (%)	Female (%)
Married	56	5
Single	33	83
Split	11	12

Table 22. Initial average discount rates and take up rates for new AOV pensions

Type of pension	Pessimistic	Intermediate	Optimistic
Married	10.3	13.7	17.1
Single	11.6	15.5	19.4
Split	8.5	11.3	14.1

Accounting for the significant migration in recent years, average discount rates are assumed to increase over time, resulting in smaller pensions relative to the full pension. For each scenario, the discount rates in 2032 are assumed to be 30 per cent higher than those shown above, and in 2062, 50 per cent higher than the rates shown above.

Shown in Table 23 is the percentage of the age-60 residents in Aruba who will qualify for an AOV pension each year. These assumptions represent educated guesses such that projections on their basis should only be used for illustrative purposes.

Table 23. Assumed percentage of the population turning 60 and qualifying for an AOV pension (used to assess different residency eligibility conditions)

Pessimistic (%)	Intermediate (%)	Optimistic (%)
105	100	95

A2.3. Projection of AWW expenditure

Similar to the methodology used for AOV pensions, the projections of AWW pensions are performed following a year-by-year cohort methodology with the main contingency being death. However, given that each of the AWW pensions has an age limit, pensions are assumed to cease at age 60 for widow(er) and invalids and at age 24 for orphans. For each year up to 2062, the number of pensioners is estimated. The pension amounts are assumed to increase as the Single AOV pension rate does, with the relative relationship that exists in 2003 remaining the same. The number of new widow(er)s, orphans and invalids are arrived at by applying fixed rates to the general population, based on experience in recent years. These rates are shown in Table 25. The following table shows the number of AWW pensions by type that were in payment at the end of April 2003.

Table 24. AWW pensions-in-payment, April 2003

Age	Widow(er)s		Orphans		Invalids	
	Male	Female	Male	Female	Male	Female
0 - 4	-	-	17	10	-	-
5 - 9	-	-	65	60	-	-
11 - 14	-	-	118	110	-	-
15 - 19	-	-	141	150	-	-
20 - 24	-	-	93	111	-	1
25 - 29	3	2	-	-	-	3
30 - 34	4	7	-	-	-	18
35 - 39	8	11	-	-	11	41
40 - 44	5	29	-	-	12	46
45 - 49	5	32	-	-	15	59
50 - 54	26	86	-	-	17	45
55 - 59	33	113	-	-	9	23
# of Pensioners	**84**	**280**	**434**	**441**	**64**	**236**
Avg Monthly Pension (Afl's)	**793**	**685**	**335**	**337**	**900**	**900**

Table 25. Incidence rates for AWW pensions (per 1000 of persons in general population)

Age	Widow(er)s		Orphans		Invalids	
	Male	Female	Male	Female	Male	Female
0 - 4	-	-	0.60	0.27	-	-
5 - 9	-	-	2.10	1.01	-	-
11 - 14	-	-	3.34	2.20	-	-
15 - 19	-	-	3.77	3.51	-	-
20 - 24	-	-	3.53	3.72	-	0.05
25 - 29	0.04	0.07	-	-	-	0.12
30 - 34	0.08	0.10	-	-	-	0.29
35 - 39	0.15	0.18	-	-	0.24	0.63
40 - 44	0.20	0.25	-	-	0.47	0.75
45 - 49	0.14	0.49	-	-	0.23	0.89
50 - 54	0.22	1.35	-	-	0.44	1.07
55 - 59	0.92	3.10	-	-	0.61	1.14

Annex 3. Projection results under *status quo* provisions and according to the pessimistic and optimistic scenarios

Table 26. Projected population of Aruba, pessimistic scenario

Year	Total	Age 0 - 15	Age 16 - 64	Age 62 and over	Ratio of persons 16-61 to 62+
2000	90 512	22 331	58 042	10 139	5,7
2003	94 225	22 313	60 691	11 221	5,4
2004	94 909	22 240	61 033	11 636	5,2
2005	95 571	21 939	61 479	12 153	5,1
2006	96 208	21 755	61 787	12 666	4,9
2007	96 822	21 569	62 033	13 220	4,7
2008	97 416	21 296	62 323	13 797	4,5
2012	99 563	20 181	62 856	16 526	3,8
2022	103 113	18 488	59 195	25 430	2,3
2032	103 640	17 980	54 455	31 205	1,7
2042	100 231	16 868	54 165	29 198	1,9
2052	94 964	15 633	51 433	27 898	1,8
2062	90 658	14 917	47 489	28 252	1,7

Table 27. Projected benefit expenditure, pessimistic scenario

Year	Benefit expenditure (million Afl's)			Benefit expenditure (% of insurable earnings)				Benefit expenditure (% of GDP)
	AOV	AWW	Total	AOV	AWW	Admin.	Total	
2002	126	10	136	12,0	1,0	0,2	13,2	4,1
2003	125	10	135	11,3	0,9	0,2	12,4	3,8
2004	138	11	149	11,9	1,0	0,2	13,1	4,0
2005	150	12	162	12,3	1,0	0,2	13,5	4,2
2006	163	13	176	12,7	1,0	0,2	13,9	4,3
2007	177	14	191	13,2	1,0	0,2	14,4	4,5
2008	194	15	209	13,7	1,1	0,3	15,1	4,7
2012	277	18	295	16,7	1,1	0,3	18,1	5,6
2022	655	23	678	26,8	0,9	0,4	28,1	8,7
2032	1 246	27	1 273	35,8	0,8	0,5	37,1	11,5
2042	1 774	42	1 816	35,9	0,8	0,5	37,2	11,6
2052	2 500	61	2 561	35,6	0,9	0,5	37,0	11,5
2062	3 858	84	3 942	38,7	0,8	0,6	40,1	12,4

Table 28. Projected Aruba population, optimistic scenario

Year	Total	Age 0 - 15	Age 16 - 64	Age 62 and over	Ratio of persons 16-61 to 62+
2000	90 512	22 331	58 042	10 139	5,7
2003	94 953	22 402	61 330	11 221	5,5
2004	96 387	22 447	62 304	11 636	5,4
2005	97 820	22 293	63 372	12 155	5,2
2006	99 252	22 287	64 293	12 672	5,1
2007	100 687	22 309	65 144	13 234	4,9
2008	102 124	22 275	66 027	13 822	4,8
2012	107 869	22 395	68 840	16 634	4,1
2022	121 159	25 145	70 065	25 949	2,7
2032	132 273	27 394	71 475	33 404	2,1
2042	140 910	27 827	77 390	35 693	2,2
2052	148 647	29 603	80 072	38 972	2,1
2062	157 067	31 541	83 837	41 689	2,0

Table 29. Projected AOV and AWW expenditure, optimistic scenario

Year	Benefit expenditure (million Afl's)			Benefit expenditure (% of insurable earnings)				Benefit expenditure (% of GDP)
	AOV	AWW	Total	AOV	AWW	Admin.	Total	
2002	126	10	136	12,0%	1,0%	0,2%	13,2%	4,1%
2003	125	10	135	11,1%	0,9%	0,2%	12,2%	3,8%
2004	135	11	146	11,3%	0,9%	0,2%	12,4%	3,9%
2005	146	12	158	11,4%	1,0%	0,2%	12,6%	3,9%
2006	156	13	169	11,5%	1,0%	0,2%	12,7%	3,9%
2007	168	14	182	11,6%	1,0%	0,2%	12,8%	4,0%
2008	183	15	198	11,8%	1,0%	0,2%	13,0%	4,0%
2012	251	18	269	13,1%	0,9%	0,2%	14,2%	4,4%
2022	561	25	586	17,1%	0,8%	0,3%	18,2%	5,6%
2032	1 087	34	1 121	20,1%	0,6%	0,3%	21,0%	6,5%
2042	1 743	59	1 802	19,6%	0,7%	0,3%	20,6%	6,4%
2052	2 794	88	2 882	19,1%	0,6%	0,3%	20,0%	6,2%
2062	4 528	139	4 667	18,8%	0,6%	0,3%	19,7%	6,1%

Table 30. Projected population of Aruba, intermediate scenario (for normal retirement age 62)

Year	Total	Age 0 - 15	Age 16 - 64	Age 62 and over	Ratio of persons 16-61 to 62+
2000	90 511	22 331	59 537	8 643	6,9
2003	94 539	22 352	63 193	8 994	7,0
2004	95 552	22 331	63 895	9 326	6,9
2005	96 558	22 095	64 801	9 662	6,7
2006	97 556	21 991	65 528	10 037	6,5
2007	98 550	21 900	66 224	10 426	6,4
2008	99 541	21 737	66 891	10 913	6,1
2012	103 448	21 206	69 288	12 954	5,3
2022	111 820	21 653	69 592	20 575	3,4
2032	117 208	22 530	67 105	27 573	2,4
2042	119 610	22 119	69 231	28 260	2,4
2052	120 603	22 207	69 856	28 540	2,4
2062	122 294	22 680	69 316	30 298	2,3

Table 31. Projected population of Aruba, intermediate scenario (for normal retirement age 65)

Year	Total	Age 0- 15	Age 16-64	Age 62 and over	Ratio of persons 16-61 to 62+
2000	90 511	212 331	61 528	6 652	9,2
2003	94 539	22 352	64 637	7 550	8,6
2004	95 553	22 331	65 342	7 880	8,3
2005	96 558	22 095	66 209	8 254	8,0
2006	97 556	21 991	66 994	8 571	7,8
2007	98 551	21 900	67 762	8 889	7,6
2008	99 541	21 737	68 560	9 244	7,4
2012	103 448	21 206	71 228	11 014	6,5
2022	111 821	21 653	72 690	17 478	4,2
2032	117 208	22 530	70 012	24 666	2,8
2042	119 610	22 119	71 457	26 034	2,7
2052	120 602	22 207	72 803	25 592	2,8
2062	122 294	22 680	72 197	27 417	2,6